855 Caperton Blvd.
Martinsburg, WV
25403
tel 304.260.7000
www.QG.com

January 9, 2017

Assistant Director for Permitting WV
WV Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304

RE: Quad/Graphics, Inc. – Class II Administrative Update for a C700 Printing Press

Hello,

Quad/Graphics (Quad) respectfully submits a Class II Administrative Update for its' Martinsburg, West Virginia facility. Enclosed, please find copies of the following:

-two CD with copies of the application
-a hardcopy of application materials
-area map
-plot plan of the facility
-flow diagrams of facility processes

The scope of this project involves moving a Goss C700E Heatset Offset Lithographic printing press to the Martinsburg facility from one of Quad/Graphics' recently closed facilities. The press will not be immediately installed but will be placed in storage on site for a later, undetermined, date. While the intention is not to install the press at present, the facility wishes to update the current operating permits to allow the installation of the press for when the decision is made to do so. The facility requests that the permit is amended to replace one of the current permitted M3000 presses with the proposed C700E printing press. There will be an emissions reduction with this change and is demonstrated in the application materials.

If you have any questions or comments in regards to this application, please contact me by phone or email.

Respectfully,

Bryan Olson
Regional Corporate Environmental Coordinator
Quad/Graphics, Inc.
N11896 Hwy. 175
Lomira, WI 53048
(920) 269-5246
Email: BLOlson@qg.com

Cc: Tom Estock – Director of Environmental Management – Sussex, WI

Enc.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.dep.wv.gov/daq

APPLICATION FOR NSR PERMIT AND TITLE V PERMIT REVISION (OPTIONAL)

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

☐ **CONSTRUCTION** ☐ **MODIFICATION** ☐ **RELOCATION**
☐ **CLASS I ADMINISTRATIVE UPDATE** ☐ **TEMPORARY**
☒ **CLASS II ADMINISTRATIVE UPDATE** ☐ **AFTER-THE-FACT**

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

☐ **ADMINISTRATIVE AMENDMENT** ☒ **MINOR MODIFICATION**
☐ **SIGNIFICANT MODIFICATION**

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant *(as registered with the WV Secretary of State's Office):*
Quad/Graphics, Inc.

2. Federal Employer ID No. ***(FEIN):***
391152983

3. Name of facility *(if different from above):*
Quad/Graphics, Inc.

4. The applicant is the:
☐ **OWNER** ☐ **OPERATOR** ☒ **BOTH**

5A. Applicant's mailing address:
855 Caperton Boulevard
Martinsburg, WV 25403

5B. Facility's present physical address:
855 Caperton Boulevard
Martinsburg, WV 25403

6. **West Virginia Business Registration.** Is the applicant a resident of the State of West Virginia? ☐ **YES** ☒ **NO**

- If **YES,** provide a copy of the **Certificate of Incorporation/Organization/Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A.**
- If **NO,** provide a copy of the **Certificate of Authority/Authority of L.L.C./Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A.**

7. If applicant is a subsidiary corporation, please provide the name of parent corporation:

8. Does the applicant own, lease, have an option to buy or otherwise have control of the *proposed site?* ☒ **YES** ☐ **NO**

- If **YES,** please explain: Quad/Graphics, Inc. own the facility
- If **NO,** you are not eligible for a permit for this source.

9. Type of plant or facility (stationary source) to be **constructed, modified, relocated, administratively updated** or **temporarily permitted** (e.g., coal preparation plant, primary crusher, etc.): Quad/Graphics will be installing one (1) C700 Heatset Lithographic Presses

10. North American Industry Classification System **(NAICS)** code for the facility:
2752, 2754, 2893

11A. DAQ Plant ID No. (for existing facilities only):
003-00042

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
R14-0012F, R30-00300042-2012

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

12A.

- For **Modifications, Administrative Updates** or **Temporary permits** at an existing facility, please provide directions to the *present location* of the facility from the nearest state road;
- For **Construction** or **Relocation permits,** please provide directions to the *proposed new site location* from the nearest state road. Include a **MAP** as **Attachment B.**

Take I-81 North to Martinsburg (for 20 minutes) to exit 16W/Hwy 9. Take a right at the second stoplight onto General Motors Access Road (GM). At the end of the road, turn right onto Caperton Blvd. Quad is at the end of the road, take a left at the flagpoles.

12.B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
855 Caperton Boulevard (same site) Martinsburg, WV 25403	Martinsburg	Berkeley
12.E. UTM Northing (KM): 4,377.00	12F. UTM Easting (KM): 247.00	12G. UTM Zone: 18

13. Briefly describe the proposed change(s) at the facility:
Quad will need to construct one (1) C700 Heatset Lithographic presses for their retail printing platform.

14A. Provide the date of anticipated installation or change: 04/1/2017 – If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: / /	14B. Date of anticipated Start-Up if a permit is granted: 06/01/2017

14C. Provide a **Schedule** of the planned **Installation** of/**Change** to and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:
Hours Per Day 24 Days Per Week 7 Weeks Per Year52

16. Is demolition or physical renovation at an existing facility involved? ☒ **YES** ☐ **NO**

17. **Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18. **Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process *(if known).* A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance *(if known).* Provide this information as **Attachment D.**

Section II. Additional attachments and supporting documents.

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

20. Include a **Table of Contents** as the first page of your application package.

21. Provide a **Plot Plan,** e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to ***Plot Plan Guidance***) .
– Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F.**

23. Provide a **Process Description** as **Attachment G.**
– Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned ☒ **Responsible Official** / ☐ **Authorized Representative,** hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE _____ DATE: 01/06/2017

(Please use blue ink) *(Please use blue ink)*

35B. Printed name of signee: Tom Estock		35C. Title: Director of Environmental
35D. E-mail: Tom.Estock@qg.com	36E. Phone: 414-566-7617	36F. FAX:
36A. Printed name of contact person (if different from above):		36B. Title:
36C. E-mail:	36D. Phone:	36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- ☒ **Attachment A: Business Certificate**
- ☒ **Attachment B: Map(s)**
- ☒ **Attachment C: Installation and Start Up Schedule**
- ☒ **Attachment D: Regulatory Discussion**
- ☒ **Attachment E: Plot Plan**
- ☒ **Attachment F: Detailed Process Flow Diagram(s)**
- ☒ **Attachment G: Process Description**
- ☒ **Attachment H: Material Safety Data Sheets (MSDS)**
- ☒ **Attachment I: Emission Units Table**
- ☒ **Attachment J: Emission Points Data Summary Sheet**
- ☒ **Attachment K: Fugitive Emissions Data Summary Sheet**
- ☒ **Attachment L: Emissions Unit Data Sheet(s)**
- ☒ **Attachment M: Air Pollution Control Device Sheet(s)**
- ☒ **Attachment N: Supporting Emissions Calculations**
- ☐ **Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans**
- ☐ **Attachment P: Public Notice**
- ☐ **Attachment Q: Business Confidential Claims**
- ☒ **Attachment R: Authority Forms**
- ☒ **Attachment S: Title V Permit Revision Information**
- ☒ **Application Fee**

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:

- ☐ ***Forward 1 copy of the application to the Title V Permitting Group and:***
- ☐ ***For Title V Administrative Amendments:***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit,***
- ☐ ***For Title V Minor Modifications:***
  - ☐ ***Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit.***
- ☐ ***For Title V Significant Modifications processed in parallel with NSR Permit revision:***
  - ☐ ***NSR permit writer should notify a Title V permit writer of draft permit,***
  - ☐ ***Public notice should reference both 45CSR13 and Title V permits,***
  - ☐ ***EPA has 45 day review period of a draft permit.***

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H.**

– For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I.**

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J.**

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K.**

28. Check all applicable **Emissions Unit Data Sheets** listed below:

☐ Bulk Liquid Transfer Operations	☐ Haul Road Emissions	☐ Quarry
☐ Chemical Processes	☐ Hot Mix Asphalt Plant	☐ Solid Materials Sizing, Handling and Storage Facilities
☐ Concrete Batch Plant	☐ Incinerator	☐ Storage Tanks
☐ Grey Iron and Steel Foundry	☐ Indirect Heat Exchanger	
☒ General Emission Unit, specify RTO		

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L.**

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

☐ Absorption Systems	☐ Baghouse	☐ Flare
☐ Adsorption Systems	☐ Condenser	☐ Mechanical Collector
☒ Afterburner	☐ Electrostatic Precipitator	☐ Wet Collecting System

☐ Other Collectors, specify

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M.**

30. Provide all **Supporting Emissions Calculations** as **Attachment N,** or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O.**

➢ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and ***Example Legal Advertisement*** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

☐ **YES** ☒ **NO**

➢ If **YES,** identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's ***"Precautionary Notice – Claims of Confidentiality"*** guidance found in the ***General Instructions*** as **Attachment Q.**

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

☒ Authority of Corporation or Other Business Entity	☐ Authority of Partnership
☐ Authority of Governmental Agency	☐ Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R.**

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

Table of Contents

WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION CERTIFICATE

ISSUED TO:
QUAD/GRAPHICS INC
BERKELEY CTY INDSTRL PK
MARTINSBURG, WV 25401-0000

BUSINESS REGISTRATION ACCOUNT NUMBER: **1029-1167**

This certificate is issued on: 09/2/2011

This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code

The person or organization identified on this certificate is registered to conduct business in the State of West Virginia at the location above.

This certificate is not transferrable and must be displayed at the location for which issued.

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them. CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

atL006 v.4
L2027956864

YOUR TRIP TO:

855 Caperton Blvd, Martinsburg, WV 25403-8081

11 MIN | 5.1 MI

Trip time based on traffic conditions as of 12:04 PM on February 8, 2016. Current Traffic: Moderate

1. Start out going north on S Queen St/US-11 N/WV-9/WV-45 toward E Burke St/County Hwy-36. Continue to follow WV-9.

Then 3.79 miles — 3.79 total miles

2. Turn right onto GM Access Rd/County Hwy-9/30.
GM Access Rd is just past Crimson Cir.

If you reach Stribling Rd you've gone about 0.1 miles too far.

Then 0.80 miles — 4.59 total miles

3. Turn right onto Caperton Blvd.

Then 0.47 miles — 5.06 total miles

4. 855 CAPERTON BLVD is on the left.
If you reach the end of Caperton Blvd you've gone about 0.2 miles too far.

SHEET INDEX

SURVEYOR

PATTON HARRIS RUST & ASSOCIATES
A PROFESSIONAL CORPORATION
208 CHURCH STREET S.E.
LEESBURG, VIRGINIA 20175
703-777-3616

BUILDING USE

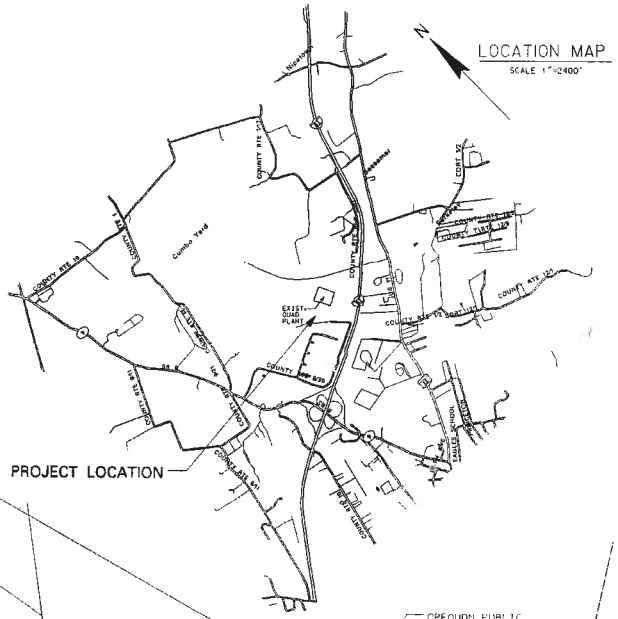
PRINTING FACILITY

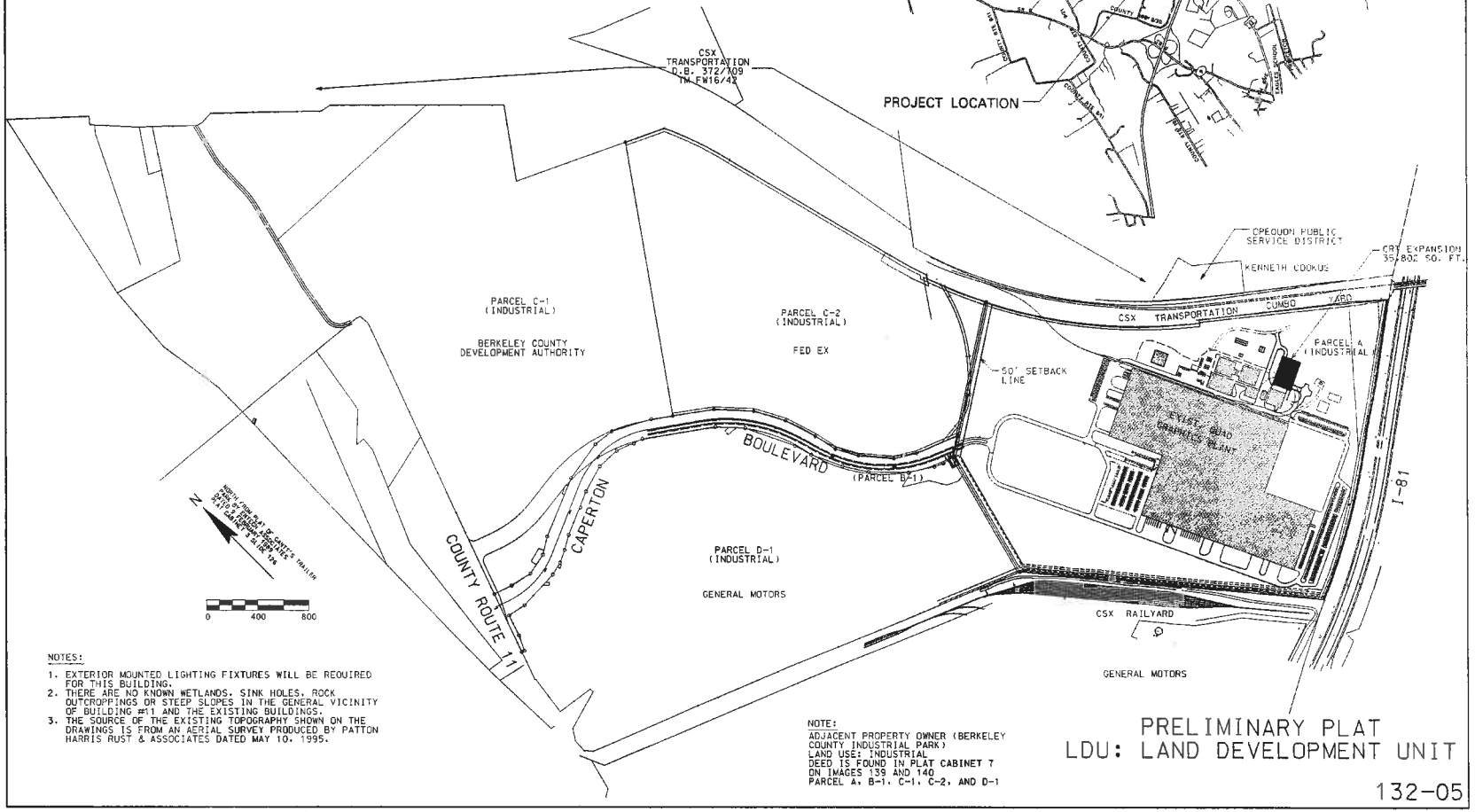
OWNER

QUAD/GRAPHICS INC.
W224 N344 DUPLAINVILLE RD.
PEWAUKEE, WI 53072

ENGINEER

GRAEF ANHALT SCHLOEMER & ASSOCIATES
A PROFESSIONAL CORPORATION
125 SOUTH 84TH STREET, SUITE 401
MILWAUKEE, WI 53214
414-259-1500





NOTES:

1. EXTERIOR MOUNTED LIGHTING FIXTURES WILL BE REQUIRED FOR THIS BUILDING.
2. THERE ARE NO KNOWN WETLANDS, SINK HOLES, ROCK OUTCROPPINGS OR STEEP SLOPES IN THE GENERAL VICINITY OF BUILDING #1 AND THE EXISTING BUILDINGS.
3. THE SOURCE OF THE EXISTING TOPOGRAPHY SHOWN ON THE DRAWINGS IS FROM AN AERIAL SURVEY PRODUCED BY PATTON HARRIS RUST & ASSOCIATES DATED MAY 10, 1995.

NOTE:
ADJACENT PROPERTY OWNER (BERKELEY COUNTY INDUSTRIAL PARK)
LAND USE: INDUSTRIAL
DEED IS FOUND IN PLAT CABINET 7
ON IMAGES 139 AND 140
PARCEL A: B-1, C-1, C-2, AND D-1

PRELIMINARY PLAT
LDU: LAND DEVELOPMENT UNIT

132-05

Quad/Graphics Inc.
CONSTRUCTION MANAGER
W224 N3322 DUPLAINVILLE RD.
PEWAUKEE, WI 53072
414-566-7671

GRAEF ANHALT SCHLOEMER and Associates Inc.
One Honeycreek Corporate Center
125 South 84th Street, Suite 401
Milwaukee, WI 53214-1470
414-259-1500
(Fax)414-259-0037

PROJECT LOCATION

WEST VIRGINIA PLANT
CRT EXPANSION
855 CAPERTON BOULEVARD
MARTINSBURG, WV 25401

PRELIMINARY PLAT
LDU: LAND DEVELOPMENT UNIT
OF PARCEL A
OF THE OATES FARM

REVISIONS

NO.	DATE	BY	DESCRIPTION

LOCATION PLAN

SHEET TITLE

PROJECT NO.	20060025.07	DATE	8/21/06
DRAWN BY	ADS	DRAWING NO.	C100
CHECKED BY	ARK		
APPROVED BY	TWF		

Attachment C
C700 Press Install
Schedule of Installation

I. Construction Phase:
   a. Presses will be broken down and removed from an existing plant beginning early April 2017.
   b. The first press will be delivered beginning mid-April and is intended to be temporarily placed in storage and not to immediately be installed. In addition, no mechanical or physical work on the facility to be able to install the press will be attempted at this time.
   c. At a later, undetermined date, the press will be installed including all mechanical work that is needed prior to installation.

Attachment D
Possible Federal and State Air Pollution Regulations

The following requirements are believed to apply to this operation and drafted as listed in the draft Title V Permit R30-00300042-2017, currently in public comment.

5.0 Heatset Web Offset Lithographic Presses [emission unit ID(s): OP-01, OP-02, OP-03, OP-04, OP-05, OP-06, OP-07, OP-08, OP-09, OP-10, OP-11, OP-12]

5.1. Limitations and Standards

5.1.1. The following table provides a list of heatset web offset lithographic presses authorized to operate by this permit at the subject facility. The presses shall be installed, maintained, and operated so as to minimize any fugitive escape of VOC-laden vapors and shall utilize the following specified control devices:

Source ID No.	Source Description	Control Device ID No.	Control Device Description	Emission Point ID No.
OP-01	C700E 4-unit, 4 color, heatset, Offset Web Printing Press	F-01	Thermal Oxidizer	S-28
OP-02	C700E 4-unit, 4 color, heatset, Offset Web Printing Press	F-01	Thermal Oxidizer	S-28
OP-03	Heidelberg Harris M1000 8-unit, 4 color, heatset, Offset Web Printing Press	F-03	Catalytic Oxidizer	S-30
OP-04	Man Roland, Rotoman SS, 8-unit, 4 color, heatset, Offset Web Printing Press (M1000)	F-04	Thermal Oxidizer	S-31
OP-05	Man Roland, Rotoman SS, 8-unit, 4 color, heatset, Offset Web Printing press (M1000)	F-05	Thermal Oxidizer	S-32
OP-06	M1000 8-unit, 4 color, heatset, Offset Web Printing Press	F-06	Thermal Oxidizer	S-33
OP-07	M1000 8-unit, 4 color, heatset, Offset Web Printing Press	F-07	Thermal Oxidizer	S-34
OP-08	M1000 8-unit, 4 color, heatset, Offset Web Printing Press	F-08	Thermal Oxidizer	S-35
OP-09	M3000 8-unit, 4 color, heatset, Offset Web Printing Press	F-09	Thermal Oxidizer	S-36
OP-10	M3000 8-unit, 4 color, heatset, Offset Web Printing Press	F-10	Thermal Oxidizer	S-37
OP-11	M3000 8-unit, 4 color, heatset, Offset Web Printing Press	F-11	Thermal Oxidizer	S-38
OP-12	M3000 8-unit, 4 color, heatset, Offset Web Printing Press	F-12	Thermal Oxidizer	S-39

[45CSR14, R14-0012, 4.1.2.a]

5.1.2. Maximum hourly and annual emissions from the operation of each heatset web offset lithographic presses identified under 5.1.1, as emitted from the appropriate control device, shall not exceed those limits as specified in Appendix B. The hourly PM_{10} emission limits from Appendix B shall demonstrate compliance with the less stringent 45CSR§6-4.1 hourly particulate matter emission limits for emission points S-28, S-30, S-31, S-32, S-33, S-34, S-35, S-36, S-37, S-38, and S-39.
[45CSR14, R14-0012, 4.1.2.b; 45CSR§6-4.1]

5.1.3. At all times the presses as identified under 5.1.1 are engaged in printing operations, each of the press dryers shall vent to the specified control device and they shall not be by-passed, disconnected, or otherwise rendered ineffective in the control of VOCs from the printing operations.
[45CSR14, R14-0012, 4.1.2.c]

5.1.4. Each oxidizer exhaust fan on each heatset web offset lithographic presses listed under 5.1.1 shall be equipped and operated with a process interlock to ensure that the fan continuously effects a negative operating pressure on each of the unit press dryers.
[45CSR14, R14-0012, 4.1.2.d]

5.1.5. The catalytic oxidizer, identified as F-03, shall maintain a minimum VOC destruction efficiency of 97.5% by weight during all times of operation. The catalytic oxidizer shall be monitored and operated according to the following conditions:

a. The permittee shall install, calibrate, and maintain devices to continuously monitor and record that the following conditions are met during all times of operation:

Operating Parameter	F-03
Inlet Catalyst Bed Temperature Range (°F)	550 – 850
Maximum Outlet Catalyst Bed Temperature (°F)	1,100
Minimum Catalyst Bed Temperature Rise (°F)	200
Maximum Catalyst Bed Temperature Rise (°F)	400

b. The catalytic oxidizer shall be equipped and operated with a process interlock to ensure that a maximum pressure drop of 13 inches of water is continuously effected across the catalyst bed.

c. The permittee shall maintain records sufficient to demonstrate that the following conditions are met during all times of operation:

Operating Parameter	F-03
Minimum Inlet Air Flow Rate (scfm)	7,000
Minimum Catalyst Bed Volume (ft^3)	39
Maximum VOC Load to Catalytic Oxidizer (lb/hr)	196

d. The catalytic oxidizer shall be equipped and operated with an interlock that prevents the outlet catalyst bed temperature from exceeding 1,100 °F.

[45CSR14, R14-0012, 4.1.2.e]

5.1.6. Each thermal oxidizer, identified in Permit Application R14-0012B as F-01, and F-04 though F-12, shall maintain a minimum VOC destruction efficiency of 97.50 %, by weight, during all times of operation. Each thermal oxidizer shall be monitored and operated according to the following conditions:

a. The thermal oxidizer shall maintain a firebox temperature of no less than 1,250 °F (677 °C). The owner or operator shall install, calibrate, maintain, and continuously operate a monitoring device for the measurement of the thermal oxidizer firebox temperature. The monitoring device is to be certified by the manufacturer to be accurate within ± 1 % in degrees Fahrenheit.

[45CSR14, R14-0012, 4.1.2.f]

5.1.7. The following equipment shall not exceed the specified maximum design heat inputs (MDHI) and maximum fuel usage limits:

M1000 with Catalytic Oxidizer (OP-03 and F-03)[1]	
Number of dryers	2
Dryer MDHI (mmBtu/hr)	3.70
Catalytic Oxidizer Afterburner MDHI	3.02
Total MDHI	10.42
Maximum Annual Natural Gas Usage (mmSCF/yr)	50.40
Maximum Annual LPG Usage (gallons/yr)	19,343
M1000 with Thermal Oxidizer (OP-04, 05, 06, 07, 08 and F-04, 05, 06, 07, 08)[1]	
Number of dryers	2
Dryer MDHI (mmBtu/hr)	7.00
Thermal Oxidizer Afterburner MDHI	N/A
Total MDHI	14.00
Maximum Annual Natural Gas Usage (mmSCF/yr)	72.87
Maximum Annual LPG Usage (gallons/yr)	25,989
M3000 with Thermal Oxidizer (OP-(09,10,11,12) and F-(09,10,11,12))[1]	
Number of dryers	2
Dryer MDHI (mmBtu/hr)	8.00
Thermal Oxidizer Afterburner MDHI	n/a
Total MDHI	16.00
Maximum Annual Natural Gas Usage (mmSCF/yr)	85.42
Maximum Annual LPG Usage (gallons/yr)	29,702
C700E with Thermal Oxidizer (OP-(01,02) and F-(01))[1]	
Number of dryers	1
Dryer MDHI (mmBtu/Hr)	7
Thermal Oxidizer Afterburner MDHI	n/a
Total MDHI	7.00
Maximum Annual Natural Gas Usage (mmSCF/yr)	38.43
Maximum Annual LPG Usage (gallons/yr)	14,749

[1] The limits are on a per unit basis and are not aggregated for all similar units.

[45CSR14, R14-0012, 4.1.2.g]

5.1.8. The thermal oxidizers identified as F-01 and F-04 through F-12 shall be limited to consuming propane or pipeline quality natural gas. The sulfur concentration of the propane supplied to the facility shall not exceed 169 ppm by weight.
[45CSR14, R14-0012, 4.1.2.h]

5.1.9. Visible particulate matter generate from the thermal and catalytic oxidizers identified as F-01 through F-12 shall not be greater than or equal to 20% opacity except for visible particulate matter emissions less than 40% for a period or periods aggregating no more than 8 minutes per start-up.
[45CSR14, R14-0012, 4.1.2.i; 45CSR§§6-4.3 and 4.4]

5.1.10. All used rags containing any washing and clean-up solvents shall be stored in closed containers until their removal from the facility.
[45CSR14, R14-0012, 4.1.2.j]

5.1.11. Material types used for the following specified purposes shall be limited to the maximum specified VOC and HAP contents:

Material	VOC Contents[1]	HAP Contents (lb/gal)

	Weight %	lb/gal	Xylene	Ethylbenzene	Naphthalene
Inks	44.00	3.67	0.00	0.00	0.00
Auto Blanket Wash (on rolls)	30.00	0.14	0.00	0.00	0.00
Auto Blanket Wash	30.00	2.19	0.00	0.00	0.06
Blanket Wash	No limit	6.58	0.07	0.00	0.00
Fountain Solution	No limit	2.09	0.00	0.00	0.00
Clean Up Solvent	No limit	6.43	0.30	0.08	0.00

(1) The material must meet both limits where applicable.

[45CSR14, R14-0012, 4.1.2.k]

5.1.12. The permittee shall use no fountain solution that contains a restricted alcohol. For the purposes of this permit, a "restricted alcohol" shall be defined as an alcohol which contains only one hydroxyl (-OH) group and less than five (5) carbon atoms.
[45CSR14, R14-0012, 4.1.2.l]

5.1.13. The permittee shall use no clean-up solvent with a VOC composite vapor pressure in excess of 25 mm Hg (@ 68 °F).
[45CSR14, R14-0012, 4.1.2.m]

5.1.14. The following operating parameters apply to the Blanket Wash Storage Tank:

a. Maximum capacity of 2,000 gallons.

b. Conservation vent setting range of -0.5 psig to +0.5 psig.

c. The maximum nominal rating of any pump used to load blanket wash into the storage tank shall not exceed 100 gallons per minute (GPM).

[45CSR14, R14-0012, 4.1.2.n]

5.2. Monitoring Requirements

5.2.1. For the purpose of determining compliance with the opacity limits of condition 5.1.9, 45CSR§§6-4.3 and 4.4, the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for all emission sources subject to an opacity limit. The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40 C.F.R. Part 60, Appendix A, Method 22 or from the lecture portion of the 40 C.F.R. Part 60, Appendix A, Method 9 certification course.

Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed at each source (stack, transfer point, fugitive emission source, etc.) for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions.
If visible emissions are present at a source(s) for three (3) consecutive monthly checks, the permittee shall conduct an opacity reading at the source(s) using the procedures and

requirements of 45CSR7A as soon as practicable, but within seventy-two (72) hours of the final visual emission check. A 45CSR7A observation at a source(s) restarts the count of the number of consecutive readings with the presence of visible emissions.

[45CSR14, R14-0012, 4.2.15]

5.3. Testing Requirements

5.3.1. Within 180 days of initial startup of each heatset lithographic offset press, and at such times thereafter as may be required by the USEPA Administrator or the Director of the Division of Air Quality, the permittee shall conduct, or have conducted, a performance test on the thermal oxidizer to determine compliance with the minimum VOC destruction efficiency and shall demonstrate compliance with the hourly NO_x and CO emission limits while combusting both natural gas and LPG (NO_x only for LPG) as required under Section 5.1. Upon approval from the Director, NO_x and CO testing may be waived for similar units that have previously been determined to be in compliance through testing.
[45CSR14, R14-0012, 4.3.3]

5.3.2. Testing requirements for heatset lithographic offset press OP-03 shall be the following:

a. The permittee shall, within one hundred twenty (120) days of the installation of a new catalyst bed, conduct, or have conducted, a performance test on the catalytic oxidizer (F-03) to determine compliance with the minimum VOC destruction efficiency as required under Section 5.1.

b. Upon reaching 20,000 hours of oxidizer operation on a catalyst, the permittee shall conduct, or have conducted, within thirty (30) days, a performance test on the oxidizer to determine compliance with the minimum VOC destruction efficiency as required under Section 5.1.

c. Thereafter fulfill the above testing requirement at 20,000 hours in 5.3.2.b, the permittee shall determine the VOC destruction efficiency once every five years except when the catalyst bed has been schedule to be replaced within this five year period. Replacement of the catalyst bed shall re-institute the requirements in 5.3.2.a.

d. Thereafter fulfill the above testing requirement at 20,000 hours in 5.3.2.b, the permittee shall determine the viability of the catalyst bed in achieving the minimum VOC destruction efficiency once every year except when the catalyst bed has been schedule to be replace during the respective calendar year.

[45CSR14, R14-0012, 4.3.4]

5.3.3. All tests required by Section 5.3 shall be in accordance with 3.3.1 and 3.3.2.
[45CSR14, R14-0012, 4.3.7]

5.3.4. With respect to any mandatory testing required under Section 5.3, the permittee shall conduct the tests within the mandatory schedule unless granted a variance from such schedule by the Director of the Division of Air Quality upon request from the permittee.
[45CSR14, R14-0012, 4.3.10]

5.4. Recordkeeping Requirements

5.4.1. For the purposes of determining on-going compliance with the limits set forth in 5.1.2. the permittee shall maintain records of the following on an individual press basis:

a. The hours of operation of each heatset lithographic web offset press; and

b. The name and product number of each ink, fountain solution, blanket wash, auto blanket wash, and clean-up solvent (referred to hereafter as "material") used in the operation of each offset press; and

c. Monthly and twelve month rolling total records of the amount of natural gas and LPG that is combusted in the press dryers and oxidation equipment.

d. The mass of VOC and speciated HAPs of each material and the volume of each material used each month.

e. Within fifteen (15) days of the last day of each month, the permittee shall compile monthly records that contains the following information: hourly, monthly, and rolling twelve month emission rates for VOCs and speciated HAPs from each of the offset presses listed under 5.1.1. The report shall break down the emissions. The VOC and speciated HAP emission rates shall be calculated using the following formulas:

1. The mass of VOCs and speciated HAPs *per volume* of each material shall be determined by one of the following methods:

   i. Certified Product Data Sheets ("Certified Product Data Sheets" shall have the definition assigned to them under 40 C.F.R. 63, Subpart KK) provided by the material supplier, or

   ii. 40 C.F.R. 60, Appendix A, Method 24.

2. The mass of VOCs and speciated HAPs of each material used on a monthly basis, shall be calculated using the following formula:

   $Mass_{(pounds\ of\ VOCs,\ HAPs/Month)} = A * B$

   Where: A = Monthly material usages in gallons per month
   B = VOCs and speciated HAPs content of the materials used in pounds per gallons as determined under 5.4.1.e.1.

3. The annual, monthly, and hourly emission rates of VOCs and speciated HAPs shall be calculated in the following manner:

   i. The annual emission rate of VOCs and aggregate and speciated HAPs shall be calculated as the sum of the monthly emission rates of VOCs and speciated HAPs, respectively, from the previous twelve (12) months.

   ii. The monthly emission rate of VOCs and aggregate and speciated HAPs shall be calculated, on a monthly basis, using the following formulas:

(A) For offset stack (F-01 through F-12) emissions from the use of inks, blanket wash, auto blanket wash, and fountain solution (but not attributable to fuel combustion):

$$\text{Emission rate}_{(\text{pounds of VOCs, HAPs/Month})} = C * (1\text{-}WR) * (CapE) * (1\text{-}CE_o)$$

(B) For fugitive printing emissions from the use of inks, blanket wash, auto blanket wash, and fountain solution:

$$\text{Emission rate}_{(\text{pounds of VOCs, HAPs/Month})} = C * (1\text{-}WR) * (1\text{-}CapE)$$

(C) For clean-up solvent emissions:

$$\text{Emission rate}_{(\text{pounds of VOCs, HAPs/Month})} = C * (1\text{-}WR) * (1\text{-}CapE)$$

(D) Where:

$C = \text{Mass}_{(\text{pounds of VOCs, HAPs/Month})}$ attributed to specified material(s)
WR = Web Retention Factor
CapE = Capture Efficiency
CE_o = Minimum destruction efficiency of oxidation method

iii. The hourly emission rates of VOCs and aggregate and speciated HAPs shall be calculated, on a monthly basis, using the following formula:

$$\text{Emission rate}_{(\text{pounds of VOCs, HAPs/Hour})} = \text{Emission rate}_{(\text{pounds of VOCs, HAPs/Month})}/D$$

Where: D = Monthly hours of specific offset press operations

4. The specified values used in the calculations required under 5.4.1.e.2 and 5.4.1.e.3 shall have the values given in the following table for the specified materials:

Material	WR	CapE	CE_o
Inks	0.15	1.00	0.975
Blanket Wash	0.00	0.40	0.975
Auto Blanket Wash	0.00	0.40	0.975
Fountain Solution	0.00	0.70	0.975
Clean-up Solvent	n/a	0.40	0

f. The permittee shall maintain records of the specified oxidizer operating parameters to show compliance with the requirements identified in 5.1.6 and 5.1.7 of this permit.

[45CSR14, R14-0012, 4.2.4 and 4.2.5]

5.4.2. All records of monitoring shall be maintained in accordance with condition 3.4.2. **[45CSR14, R14-0012, 4.2.18]**

5.4.3. For the purpose of demonstrating compliance with condition 5.1.9, the permittee shall maintain records of the visible emission opacity tests conducted. Said records shall be maintained on-site or in a readily accessible off-site location maintained in accordance with 3.4.2 of this permit.

[45CSR14, R14-0012, 4.4.4]

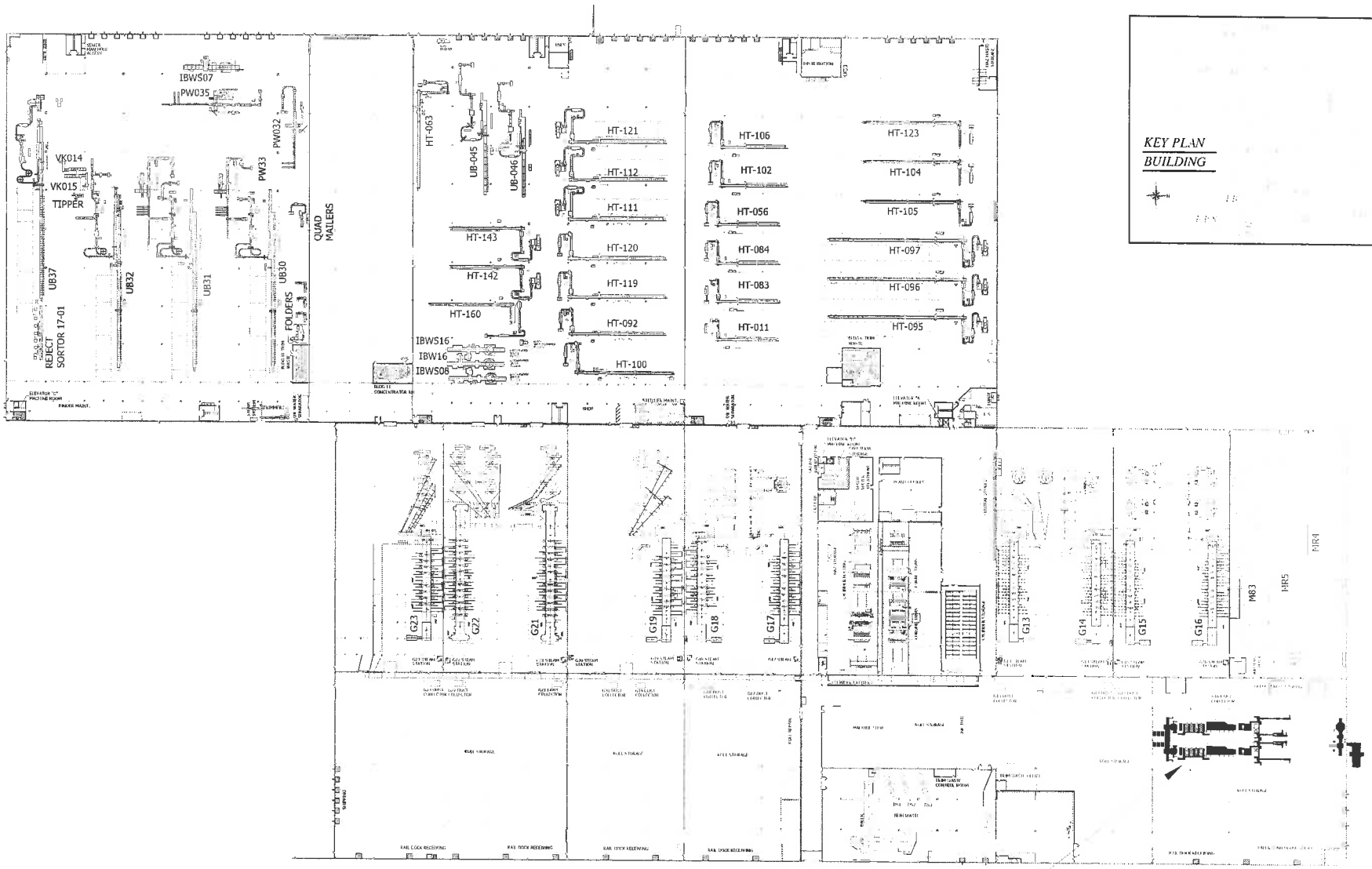
5.5. Reporting Requirements

5.5.1. Any exceedance(s) of the allowable visible emission requirement for any emission source discovered during observations using 40 C.F.R. Part 60, Appendix A, Method 9 or 22 (condition 5.2.1) shall be reported in writing to the Director of the Division of Air Quality as soon as practicable, but within ten (10) calendar days of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.
[45CSR14, R14-0012, 4.5.3]

5.5.2. The permittee shall notify the Director, in writing, of the date on which the catalyst bed in the catalytic oxidizer, identified as F-03, is to be replaced as part of scheduled or normal maintenance practices. This notification shall be made at least thirty days prior to the scheduled replacement. If the catalyst bed is replaced and it is not part of scheduled or normal maintenance, the permittee shall notify the Director, in writing, of the date on which the catalyst bed is to be or was replaced. This notification shall be made as soon as practical, but no later than seven days after such replacement has taken place and shall include the rationale for such replacement. Records of notifications shall be maintained in accordance with condition 3.4.2 of this permit.
[45CSR14, R14-0012, 4.5.4]

5.6. Compliance Plan

5.6.1. None



Martinsburg Facility

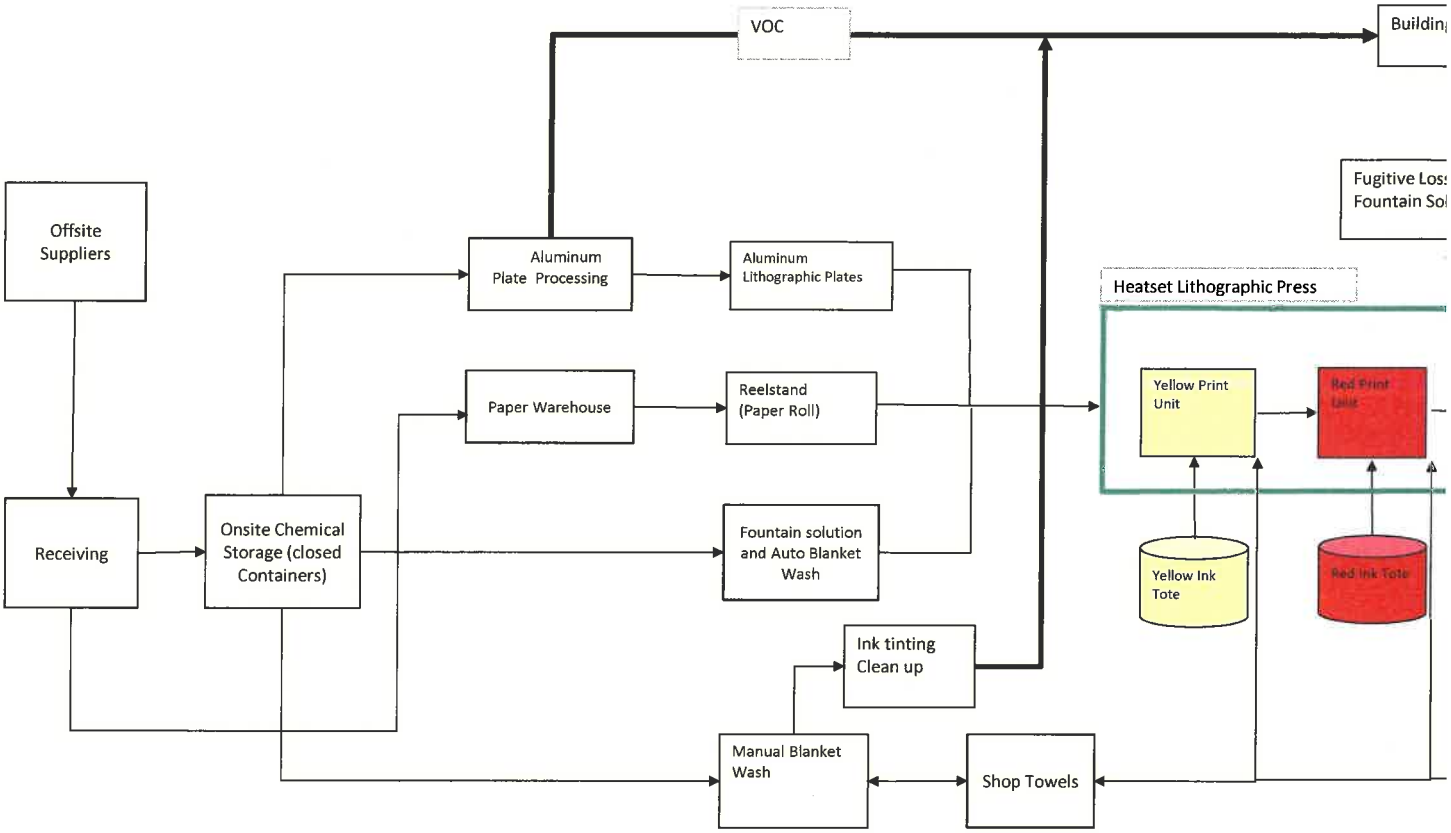
QuadGraphics

TITLE: FACILITY LAYOUT
GROUND FLOOR PLAN

DRAWN BY: FP1	CURRENT AS OF: 2/10/16	CHECKED: al	
LAYOUT:		SCALE: none	
FILE NAME: WVQ-EP00G_permit.dwg		SHEET: 1 OF 1	REV: 0

NO.	REVISION	BY	DATE

Quad/Graphics, Inc. Martinsburg, WV
Heatset Web Offset Lithographic Printing
Attachment F - Process Flow Diagram



Quad/Graphics, Inc. Martinsburg, WV
C700 Installation Permit Application
Attachment G - Process Description

The press project will result in the installation of one (1) Goss International C700E offset heatset lithographic press. The press will have 4 print units and designed to accommodate the retail print manufacturing side of Quad's business. Product flow will result in finished product that will not require stitching or binding. The product will be folded, trimmed, and prepared coming off of the presses for direct market distribution. Product will be loaded out of Building 1B where the press will be located and mass distributed to the customer destination.

Control equipment will be one CS-250 Centralized Regenerative Thermal Oxidizer (RTO). The press, along with two previously permitted and installed C700 presses, will feed exhaust into the RTO for destruction at a permitted rate of 97.5% or greater upon approval. The RTO will be required to be stacked tested 180 days post start-up and documented to the Secretary. Testing protocols will be submitted to the Secretary 30 days prior to testing for approval. In addition the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so that the Secretary may have the opportunity to observe such test. Results will be submitted as a report within 60 days of the completion of the test.

The application for Title V permit R30-00300042-2012 renewal was submitted on September 30, 2016. Quad/Graphics, Inc is a commercial printing business currently operating ten (10) rotogravure press, thirteen (13) carbon adsorbers, four (4) natural gas/propane fueled boilers, two (2) hard chromium electroplating tanks and scrubbers, three (5) offset lithographic presses with catalytic or regenerative thermal oxidizers, one (1) cylinder cleaning unit, finishing/inkjet production (full scale), and one ink blend/storage/manufacturing operation involving storage tanks, mixing tanks, and totes depending on production. The addition of one (1) Goss International C700E offset heatset lithographic presses will bring the offset press platform grand total to six (6) heatset lithographic presses.

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Trade Name: M-4 Blanket Wash WM
Generic Name: Hydrocarbon / Glycol Ether Blend

CAS#: 8052-41-3, 111-76-2

Manufacturer: SIEBERT, INC
Address: 8134 West 47th Street
City: Lyons State: IL Zip: 60534 USA

Emergency Phone #: (800) 535-5053
Technical Phone #: (708) 442-2010

DOT Hazard Classification: COMBUSTIBLE LIQUID N.O.S. NA1993 PG III (173.115)
NFPA Codes: Health - 2 Flammability - 2 Reactivity - 0
HMIS Codes: Health - 2 Flammability - 2 Reactivity - 0 Personal Protection - B

II. HAZARDOUS INGREDIENTS

If present, IARC, NTP, and OSHA carcinogens and chemicals subject to reporting requirements of SARA Title III Section 313 are identified in this section.

Ingredient Name	CAS #	%wt	PEL	TLV	SARA TITLE III
Aliphatic Hydrocarbon[1]	8052-41-3	80 to 90	100 ppm	100 ppm	No
Ethylene Glycol Mono Butyl Ether	111-76-2	10 to 20	25 ppm	25 ppm	Yes

[1] Aliphatic Hydrocarbon (CAS# 8052-41-3)
NIOSH recommends a limit of 350 mg/cum - 8-hour time weighted average (TWA), 1800 mg/cum as determined by a 15 minute sample.

III. PHYSICAL DATA

Boiling Point @ 760mm Hg:	315° - 340° F
Evaporation Rate (Butyl Acetate = 1):	0.2
Vapor Pressure @ 100°F:	~3 mm Hg
Specific Gravity @ 60°F:	0.77 - 0.788
Water Solubility (%):	Miscible
Specific Vapor Density (air = 1):	4.7
Volatile Organic Compound:	6.29 lbs/gallon
% Volatile by Volume:	98

IV. FIRE AND EXPLOSION DATA

Flash Point (Method): 105°F (TCC)
Explosive Limit: (Product) Lower - 1.0%
Extinguishing Media: Regular foam, carbon dioxide, or dry chemical.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus when fighting chemical fires.

Unusual Fire and Explosion Hazards: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from

material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

V. HEALTH HAZARD DATA

Threshold Limitation Value: 25 ppm Permissible Exposure Limit: 25 ppm

Eyes - Contact lenses must not be worn when possibility exists for eye contact due to spraying liquid or airborne particles. Can cause severe irritation, redness, tearing, blurred vision.

Skin - Prolonged or repeated exposure can cause moderate irritation, defatting, dermattitis.

Breathing - Excessive inhalation of vapors can cause nasal and respiratory irritation, central nervous system effects including dizziness, weakness, fatigue, nausea, headache and possible unconsciousness, and even death.

Swallowing - Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis which can be fatal.

First Aid / Emergency Procedures

Inhalation - Remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Keep person warm, quiet and get medical attention.

Skin Contact - Wash thoroughly with soap and water. Remove contaminated clothing. Launder contaminated clothing before re-use. Remove contaminated shoes promptly, discard shoes saturated with this product.

Eyes - Flush with copious amounts of water. Get medical attention.

Ingestion - Do NOT induce vomiting, keep person warm, quiet, and get medical attention. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal.

Primary Entry Route(s): Inhalation, skin contact, skin absorption.

VI. REACTIVITY DATA

Stability: Stable. Hazardous Polymerization: Cannot occur.

Incompatibilities: Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products: Carbon mono/di oxides.

VII. SPILL OR LEAK PROCEDURES

Procedures for Spill/Leak:

Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks, etc.).

Small Spill - Absorb liquid on paper, vermiculite, floor absorbent, or other absorbent material and transfer to hood.

Large Spill - Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Prevent run-off to sewers, streams or others bodies of water. Notify proper authorities, as required, that a spill has occurred.

Waste Management:

Small Spill - Allow volatile portion to evaporate in hood. Allow sufficient time for vapors to completely clear hood duct work. Dispose of remaining material in accordance with applicable regulations.

Large Spill - Destroy by liquid incineration with off-gas scrubber.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection: If workplace exposure limit(s) of product is exceeded, a NIOSH/MSHA approved air supplied respirator is advised in the absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions. Engineering or administrative controls should be implemented to reduce exposure.

Ventilation: Provide sufficient natural or mechanical ventilation to maintain concentrations below TLV(s).

Eye Protection: Chemical Splash Proof Goggles and full face shield are advised for operations where eye or face contact can occur.

Gloves: Wear resistant gloves such as nitrile rubber or neoprene.

Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

IX. SPECIAL PRECAUTIONS

Special Handling/Storage:

Containers of this material may be hazardous when emptied, since emptied containers retain residues. All hazard precautions given in the data sheet must be observed. Hydrocarbon solvents are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, or pumping at high flow rates. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquid.

As of the date of preparation of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable federal and state law(s). However, no warranty or representation with respect to such information is intended or given.

Date revised: 03/03/2011
jpm

[redacted]

Finished Goods Catalog / Chemical Name:
7750 Envirowash 220 SR-WM

Manufacturer Name: Anchor Lithkemko, a subsidiary of Fuji Hunt

1 PRODUCT AND COMPANY IDENTIFICATION

Product Number: 7750
Anchor Lithkemko, a subsidiary of Fuji Hunt
50 Industrial Loop North
Orange Park FL 32073

Emergency Telephone:
Medical Emergency (24HR): Prosar 877-935-7387
Transport ER Ph. (outside NA): 703-527-3887
(Accepts collect calls)
Transport ER Ph. (inside NA): 800-424-9300

Non-emergency Telephone:
EHS Hotline: 201-995-2330 (M-F 8:30am - 5pm)
General Information: 800-354-2300 (M-F 8:30am - 5pm) EST

Intended Use: Pressroom Cleaner

2 HAZARDS IDENTIFICATION

Emergency Overview
Physical State: Liquid
Color: Colorless
Odor: No data available.

CAUTION!
Prolonged or repeated contact may dry skin and cause irritation. Harmful if swallowed - may enter lungs if swallowed or vomited.
Combustible liquid and vapor.

Potential Health Effects

Inhalation: May cause lung damage. High vapor concentrations may cause drowsiness.

Eye Contact: May cause temporary eye irritation.

Skin Contact: Repeated exposure to hydrocarbons can cause dermatitis. Prolonged contact may cause dryness of the skin.

Ingestion: Swallowing of hydrocarbons can cause lung damage.

Chronic Health Effects: Repeated exposure may cause skin dryness or cracking. May cause central nervous system effects.

Target Organ(s): | Lung | Skin | Nervous system |

Potential Physical / Chemical Effects: COMBUSTIBLE.

OSHA Regulatory Status: When used for its intended purpose, this material is classified as hazardous in accordance with OSHA 29CFR 1910.1200.

Environment: The environmental hazard of the product is considered to be limited.

3 COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration*
Carboxylic Acid Esters	1119-40-0	30 - 50%
†Aliphatic Hydrocarbon	64742-88-7	15 - 30%
†Butanedioic Acid Esters	106-65-0	10 - 20%
Dibasic Esters	627-93-0	7 - 15%
†Dipropylene Glycol Methyl Ether	34590-94-8	1 - 5%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. † This chemical is hazardous according to OSHA/WHMIS criteria.

4 FIRST AID MEASURES

General: Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

Inhalation: If symptomatic, move to fresh air. Get medical attention if symptoms persist.

Eye Contact: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention promptly if symptoms occur after washing.

Skin Contact: Wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.

Ingestion: DO NOT induce vomiting if swallowed chemical is dissolved in petroleum-based material. Danger of aspiration and development of chemical pneumonia. Seek medical advice.

5 FIRE-FIGHTING MEASURES

Extinguishing Media: Extinguish with foam, carbon dioxide, dry powder or water fog.

Unsuitable Extinguishing Media: Do not use water jet as an extinguisher, as this will spread the fire.

Special Fire Fighting Procedures: Use standard firefighting procedures and consider the hazards of other involved materials.

Unusual Fire & Explosion Hazards: Vapors may travel considerable distance to a source of ignition and flash back.

Hazardous Combustion Products: Carbon Dioxide, Carbon Monoxide

Protective Measures: Self contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: Avoid inhalation of aerosols. Avoid contact with eyes and prolonged skin contact. Do not smoke, use open fire or other sources of ignition. Wear suitable protective clothing. See Section 8 of the MSDS for Personal Protective Equipment.

Spill Cleanup Methods: Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

Environmental Precautions: Avoid discharge into drains, water courses or onto the ground.

Notification Procedures: Inform Authorities if large amounts are involved.

7 HANDLING AND STORAGE

Handling: Avoid breathing mist or vapor. Avoid prolonged or repeated contact with skin. Provide adequate ventilation. Wash at the end of each work shift and before eating, smoking and using the toilet. Ground container and transfer equipment to eliminate static electric sparks.

Storage: Store in a cool and well-ventilated place. Keep container closed when not in use.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	Source	Type	Exposure Limits	Notes
Aliphatic Hydrocarbon	ACGIH	TWA	100 ppm	
Aliphatic Hydrocarbon	NIOSH Guide	Concentration	20000 mg/m³	
Aliphatic Hydrocarbon	US. OSHA Table Z-1	TWA	500 ppm 2900 mg/m³	
Dipropylene Glycol Methyl Ether	ACGIH	STEL	150 ppm	Skin
Dipropylene Glycol Methyl Ether	ACGIH	TWA	100 ppm	Skin
Dipropylene Glycol Methyl Ether	NIOSH Guide	Concentration	600 ppm	
Dipropylene Glycol Methyl Ether	US. OSHA Table Z-1	TWA	100 ppm 600 mg/m³	Skin

Engineering Controls: Use explosion-proof ventilation equipment to stay below exposure limits.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: High-efficiency particulate respirator.

Eye Protection: It is a good industrial hygiene practice to minimize eye contact.

Hand Protection: Wear chemical-resistant gloves. Contact glove manufacturer for specific information.

Skin Protection: Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9 PHYSICAL AND CHEMICAL PROPERTIES

Color: Colorless
Odor: No data available.
Odor Threshold: No data available.
Physical State: Liquid
pH: No data available
Melting Point: No data available.
Freezing Point: No data available.
Boiling Point: 205°C (401°F)
Flash Point: 63°C (145°F)
Evaporation Rate: No data available.
Flammability Limit - Upper (%): No data available.
Flammability Limit - Lower (%): No data available.
Vapor Pressure: 0.25 mmHg
Vapor Density (Air=1): No data available.
Specific Gravity: 0.846
Solubility in Water: Emulsifiable in water
Solubility (Other): No data available.
Partition Coefficient (n-Octanol/water): No data available.
Autoignition Temperature: No data available.
Decomposition Temperature: No data available.
Volatile Organic Compounds (VOC): 2.2 lbs/gal
Percent Volatile: 70 %w

10 STABILITY AND REACTIVITY

Stability: This product is stable under expected conditions of use.

Conditions to Avoid: Heat, sparks, flames.

Incompatible Materials: Strong oxidizing agents. Strong acids.

Hazardous Decomposition Products: Carbon Monoxide. Carbon Dioxide.

Possibility of Hazardous Reactions: Will not occur.

11 TOXICOLOGICAL INFORMATION

Specified Substance(s)
Acute Toxicity:

Component Chemical Name	Test Results
Carboxylic Acid Esters	Dermal LD50 (Rabbit): >3400 mg/kg
Carboxylic Acid Esters	Oral LD50 (Rat): 8191 mg/kg

Butanedioic Acid Esters	Dermal LD50 (Rabbit): >5 g/kg
Butanedioic Acid Esters	Oral LD50 (Rat): >5 g/kg

Listed Carcinogens: None

Product Information
Other Acute: Prolonged or repeated contact may dry skin and cause irritation. Swallowing of hydrocarbons can cause lung damage.

Chronic Toxicity: Repeated exposure to hydrocarbons can cause dermatitis. May cause central nervous system depression.

12 ECOLOGICAL INFORMATION

Ecotoxicity: No data available

Mobility: No data available

Persistence and Degradability: No data available

Bioaccumulation Potential: No data available

13 DISPOSAL CONSIDERATIONS

General Information: Dispose of waste and residues in accordance with local authority requirements.

Disposal Instructions: Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

14 TRANSPORT INFORMATION

DOT
UN No.: NA1993
Proper Shipping Name: Combustible liquid, n.o.s. (Aliphatic Hydrocarbon and Butanedioic Acid Esters)
Class: Combustible (Combustible Liquid)
Packing Group: III
Label(s): None

TDG Not Regulated

IATA Not Regulated

IMDG Not Regulated

15 REGULATORY INFORMATION

Canadian Controlled Products Regulations: This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

WHMIS Classification: B3

Mexican Dangerous Statement: This is a Mexican "dangerous" product.

Inventory Status

This product or all components are listed on the following inventory: TSCA

US Regulations

CERCLA Hazardous Substance List (40 CFR 302.4): None

SARA Title III
Section 302 Extremely Hazardous Substances (40 CFR 355, Appendix A): None

Section 311/312 (40 CFR 370):
[X] Acute (Immediate) [X] Chronic (Delayed) [X] Fire [ ] Reactive [ ] Pressure Generating

Section 313 Toxic Release Inventory (40 CFR 372): None

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): None

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3): None

Drug Enforcement Act: None

TSCA:

TSCA Section 4(a) Final Test Rules & Testing Consent Orders: Butanedioic Acid Esters; Carboxylic Acid Esters; Dibasic Esters; Dipropylene Glycol Methyl Ether

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Dipropylene Glycol Methyl Ether

State Regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): None

Massachusetts Right-To-Know List: Aliphatic Hydrocarbon; Dipropylene Glycol Methyl Ether

Michigan Critical Materials List (Michigan Natural Resources and Environmental Protection Act (Act. 451 of 1994)): None

Minnesota Hazardous Substances List: Aliphatic Hydrocarbon; Dipropylene Glycol Methyl Ether

New Jersey Right-To-Know List: Aliphatic Hydrocarbon; Dipropylene Glycol Methyl Ether

Pennsylvania Right-To-Know List: Aliphatic Hydrocarbon; Dipropylene Glycol Methyl Ether

Rhode Island Right-To-Know List: Aliphatic Hydrocarbon; Dipropylene Glycol Methyl Ether

16 OTHER INFORMATION

HAZARD RATINGS

	Health Hazard	Fire Hazard	Reactivity Hazard	Special Hazard
NFPA	1	2	0	–

	Health Hazard	Fire Hazard	Reactivity Hazard	Personal Protection
HMIS	1*	2	0	B

0 - Minimal; 1- Slight; 2 - Moderate; 3 - Serious; 4 - Severe *- Chronic Health Effect
B - Safety Glasses & Gloves

Issued by: http://www.fujihuntusa.com
Issue Date: 04-May-2006
Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

SDS VERSION NUMBER: 2

SAFETY DATA SHEET

Revised by: SN Revision date 7/13/2015

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	CR/T Fountain Solution
Product Code	QFS-414
Brand	CR/T
CAS#	No Information Available
Company	Chemical Research/Technology, Co.

1951 Constitution Avenue
Hartford, WI 53027
USA
Telephone: (262)673-1400
Fax: (262)673-1459
Emergency Response: CHEMTREC (QDGR)
Emergency Phone: (800)424-9300

2. HAZARDS IDENTIFICATION: GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Serious Eye Damage/Eye Irritation-Category 1

Skin Corrosion/Irritation-Category 2

Hazardous To The Aquatic Environment, Acute Hazard, Category 2

Hazardous To The Aquatic Environment, Long-Term Hazard, Category 2

Acute Toxicity, Oral-Category 4

Specific Target Organ Toxicity, Single Exposure; Respiratory Tract Irritation Category 3

Pictogram Code	Pictogram	Type of Hazard	Description
GHS05		Health	Corrosion
GHS07		Health	Exclamation mark

Pictogram Code	Pictogram	Type of Hazard	Description
GHS09		Environmental	Environment

Signal Word Danger

Hazard Code	Physical hazard statement
H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Code	Response precautionary statements	Safety Phrase
P301+P312	IF SWALLOWED: call a POISON CENTER or doctor immediately.	First Aid
P302+P352	IF ON SKIN: Wash with plenty of soap and water	First Aid
P304+P340	IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.	First Aid
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	First Aid
P313	Get medical advice/attention.	First Aid
P321	Specific treatment (see label).	First Aid
P332+P313	IF SKIN irritation occurs: Get medical advice/attention.	First Aid
P362+P364	Take off contaminated clothing and wash it before reuse.	First Aid
P391	Collect spillage.	First Aid
P264	Wash hands thoroughly after handling.	Preventative
P270	Do not eat, drink or smoke when using this product.	Preventative
P273	Avoid release to the environment.	Preventative

Precautionary Code	Response precautionary statements	Safety Phrase
P280	Wear protective gloves/protective clothing/eye protection/face protection.	Preventative
P501	Dispose of contents/container to proper receptacle	Waste

Other Hazards

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms

No Information Available

Formula

Proprietary

Molecular Weight

Mixture

Mixture?

☑

Component Name	Percent	Cas ID #	EC #	Index #
sodium nitrate	2.01%	7631-99-4	No Information Available	No Information Available
nonionic surfactant	1-10%	2687-94-7	No Information Available	No Information Available
glycol ether DB	1-10%	112-34-5	No Information Available	No Information Available

4. FIRST AID MEASURES

General Advice

No Information Available

If Inhaled

Remove victim to fresh air.

In Case of Skin Contact

Remove contaminated clothing (wash before re-use), wash affected skin areas with soap and water and seek medical attention if irritation persists.

In Case of Eye Contact

Gently flush with large quantities of water for at least 15 minutes and seek immediate medical attention.

If Swallowed

Do not induce vomiting, seek medical attention immediately.

5. FIREFIGHTING MEASURES

Conditions of Flammability

Flashpoint 200 degrees F

Suitable extinguishing media

Use water, foam, CO2, or Dry Chemical Fire Apparatus

Special protective equipment for firefighters

Fire fighters should wear sealf-contained breathing apparatus and full protective clothing. Use water spray to cool nearby containers and structures exposed to fire.

Hazardous combustion products

Can produce carbon monoxide, carbon dioxide and oxides of nitrogen

Further Information

No Information Available

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Use Personal Protective Equipment. Personnel should avoid inhalation of vapors. Personal contact with the product should be avoided.

Environmental Precautions

If possible keep large spills out of drains, sewers, or waterways.

Methods and Materials for Containment and Cleaning Up

Stop and/or contain discharge if it may be done safely. Notify local health or pollution control agencies, or call spill response teams if large spill.

7. HANDLING AND STORAGE

Precautions for safe handling

Keep product containers cool, dry and away from sources of ignition. Containers, even those that have been emptied, may retain product residues and/or vapors. Observe all hazard precautions given in this data sheet. Vapors of this product are heavier than air and will collect in low places.

Conditions for safe storage

Use and store this product with adequate ventilation. Keep product containers closed when not in use.

8. EXPOSURE CONTROL/ PERSONAL PROTECTION

Component	CASno	TestValue	Control Paramete	Basis

No Information Available	No Information Available	No Information Available	No Information Available	No Information Available

Remarks: No Information Available

No Information Available	No Information Available	No Information Available	No Information Available	No Information Available

Remarks: No Information Available

No Information Available	No Information Available	No Information Available	No Information Available	No Information Available

Remarks: No Information Available

No Information Available	No Information Available	No Information Available	No Information Available	No Information Available

Remarks: No Information Available

No Information Available	No Information Available	No Information Available	No Information Available	No Information Available

Remarks: No Information Available

Type of Personal Protection

Hygiene Measures

The availability of eye washes and safety showers in work areas is recommended.

Hand Protection

The use of gloves which are impermeable to the specific material handled to prevent irritation.

Respiratory protection

None normally necessary when this product is used in its intended manner.

Eye Protection

Safety glasses are recommended to safeguard against potential eye contact, irritation or injury.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	CR\T Blue Green
Odour	Medium Vinegar

Odour Threshhold	No Information Available
pH	3.8
Melting point/freezing point	No Information Available
Initial Boiling Pt	212°F
Flash point	>200°F
Evaporation Rate	slower than butyl acetate
Lower flammability or Explosive limits	212
Flammability (solid,gas)	No Information Available
Upper flammability or Explosive limits	447
Vapour pressure	No Information Available
Vapour density	heavier than air
Relative Density	heavier than air
Solubility	100%
Partition coefficient: n-octanol/water	No Information Available
Auto-ignition temperature	No Information Available
Decomposition temperature	No Information Available
Viscosity	10 cp @ 25°C
Element Data Applies To?	No Information Available
Other	No Information Available
Empirical data	No Information Available
Specific Gravity at 25 °C:	No Information Available
Pounds per Gallons at 25°C:	8.9
VOC via EPA Method 24:	1.18

Mixture? ☑

10. STABILITY AND REACTIVITY

Chemical stability

Stable

Possibility of hazardous reactions

No Information Available

Conditions to avoid

None

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Thermal decomposition in the presence of air may yield carbon monoxide and/or carbon dioxide

11. TOXICOLOGICAL INFORMATION

Component-Mixture Name: Glycol Ether DB

UN GHS Classification: Acute Toxicity, Oral — Route: Oral

Target Organ	Value Statement	Species	Test Result	Exposure Duration
No Information Available	No Information Available	Rat	7,291 mg/kg	No Information Available

UN GHS Classification: Serious Eye Damage/Eye Irritation — Route: No Information Available

Target Organ	Value Statement	Species	Test Result	Exposure Duration
Eyes	No Information Available	Rabbit	Irritating to Eyes	No Information Available

UN GHS Classification: Skin Corrosion/Irritation — Route: Skin

Target Organ	Value Statement	Species	Test Result	Exposure Duration
No Information Available	No Information Available	Rabbit	Mild Skin Irritation	1h

Component-Mixture Name: No Information Available

UN GHS Classification: Specific Target Organ Toxicity, Single Exposure; Respiratory Tract Irritation — Route: No Information Available

Target Organ	Value Statement	Species	Test Result	Exposure Duration
No Information Available	No Information Available	No Information Available	No Information Available	No Information Available

Component-Mixture Name: Nonionic Surfactant

UN GHS Classification	Acute Toxicity, Oral	Route	Oral

Target Organ	Value Statement	Species	Test Result	Exposure Duration
No Information Available	No Information Available	Rat	2,050 mg/kg	No Information Available

UN GHS Classification	Serious Eye Damage/Eye Irritation	Route	No Information Available

Target Organ	Value Statement	Species	Test Result	Exposure Duration
Eyes	No Information Available	Rabbit	Severe Eye Irritation	No Information Available

Component-Mixture Name Sodium Nitrate

UN GHS Classification	Acute Toxicity, Oral	Route	Oral

Target Organ	Value Statement	Species	Test Result	Exposure Duration
No Information Available	No Information Available	Rabbit	2,680 mg/kg	No Information Available
No Information Available	No Information Available	Rat	1,267 mg/kg	No Information Available

12. ECOLOGICAL INFORMATION

Toxicity

No Information Available

Persistence and degradibility

No Information Available

Bioaccumulative potential

No Information Available

Mobility in soil

No Information Available

PBT and vPvB assessment

No Information Available

Other Adverse Effects

No Information Available

13. DISPOSAL CONSIDERATIONS

Product

Dispose of product in accordance with applicable local. county. state. federal regulations.

Contaminated packaging

No Information Available

14. TRANSPORT INFORMATION

UN Number	No Information Available	**Class**	No Information Available	**Packing Group**	No Information Available

UN Proper Shipping Name No Information Available

Environmental Hazards No Information Available

Transport in Bulk(RQ No Information Available

Special Precautions/Regulatory Group No Information Available

15. REGULATORY INFORMATION

16. OTHER INFORMATION

Other information

SDS Revision 1 7/7/2014

SDS Revision 2 7/13/2015 updated Hazard Classification SN

California SCAQMD Rule 102: NONPHOTOCHEMICALLY REACTIVE

SPECIAL CALIFORNIA PROPOSITION 65 WARNINGS The following information is required by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986, or Proposition 65.

This California regulation does not address di minimus levels; therefore, even trace amounts of the chemicals included on Proposition 65's list of chemicals known to the State of California to cause cancer

or reproductive toxicity must be noted with the "Safe Harbor" wording.

WARNING: if this product contains Aromatic 100 or Lacolene--check the ingredients listed in SECTION II of this MSDS--these chemicals contain both benzene, known to the State of California to cause cancer, and

toluene, known to the State of California to cause birth defects or other reproductive harm. If this product contains VM&P Naphtha--check the ingredients listed in SECTION II of this MSDS--VM&P Naphtha

contains benzene, known to the State of California to cause cancer.

This product does NOT contain any carcinogens or suspected carcinogens which are noted by NTP, IARC or OSHA-Z in the other limits column

Further Information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. CR\T shall not be held liable for any damage resulting from handling or from contact with the above

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Trade Name: Quad Type Wash EXP1122
Generic Name: Hydrocarbon Solvent Blend

CAS #: 64742-89-8, 64-17-5, 141-78-6, 107-98-2

Manufacturer: SIEBERT, INC.
Address: 8134 West 47th Street
City: Lyons State: IL Zip: 60534 USA

Emergency Phone #: (800) 535-5053
Technical Phone #: (708) 442-2010

DOT Hazard Classification: FLAMMABLE LIQUID N.O.S., 3 UN1993 PG II
NFPA Codes: Health - 1 Flammability - 3 Reactivity - 0
HMIS Codes: Health - 2 Flammability - 3 Reactivity - 0 Personal Protection - B

II. HAZARDOUS INGREDIENTS

If present, IARC, NTP, and OSHA carcinogens and chemicals subject to the reporting requirements of SARA Title III Section 313 are identified in this section.

Ingredient Name	CAS #	%wt	Vapor Pressure	TLV	STEL	SARA TITLE III
Petroleum Distillate[1]	64742-89-8	60 to 65	10.2 mmHg	300 ppm	400 ppm	No
Ethyl Alcohol	64-17-5	15	42.0 mmHg	1000 ppm	1000 ppm	No
Ethyl Acetate	141-78-6	10 to 20	73.0 mmHg	400 ppm	400 ppm	No
Propylene Glycol Mono-methyl Ether	107-98-2	5 to 20	11.0 mmHg	100 ppm	100 ppm	No

[1] Petroleum Distillate (CAS# 64742-89-8)
NIOSH recommends a limit of 350 mg/cum - 8-hour time weighted average (TWA), 1800 mg/cum as determined by a 15 minute sample. Material contains less than 7% Xylene, CAS# 1330-20-7, which has a PEL/TLV of 100 ppm, STEL of 150 ppm; and less than 2% Ethyl Benzene, CAS# 100-41-4, which has a PEL/TVA of 100 ppm, STEL of 125 ppm. OSHA short term limit (STEL) is 400 ppm.

References: 29CFR 1910.1000, ACGIH "Threshold Limit Values for Chemicals in the Workplace", National Toxicology Program Annual Report, International Agency for Research on Cancer Monographs, and 40CFR Part 372. All components of this product are in compliance with TSCA.

III. PHYSICAL DATA

Boiling Point @ 760 mm Hg, (initial):	145 - 174°F
Vapor Pressure @ 68°F:	24.47 mm Hg
Specific Gravity @ 68°F:	0.77 - 0.788
Water Solubility (%):	Insoluble
Specific Vapor Density (air=1):	~2.8 to 3.1
% Volatile by Volume:	100
% Volatile Organic Compound(s),(EPA Method 24):	100 (6.43 lbs/gal)
Appearance:	Clear liquid
Odor:	Typical hydrocarbon

IV. FIRE AND EXPLOSION DATA

Flash Point (Method): 24°F (TCC)
Explosive Limit: LEL - ~1 UEL - ~11 @ 77°F
Extinguishing Media: Water fog, carbon dioxide, or dry chemical.
Special Fire Fighting Procedures: Wear self-contained breathing apparatus when fighting chemical fires.

Unusual Fire and Explosion Hazards: None Known.

V. HEALTH HAZARD DATA

Eyes - May cause severe irritation, tearing, blurred vision. Contact lenses must not be worn when possibility exists for eye contact due to spraying liquid or airborne particles.

Skin - Prolonged or repeated contact may cause irritation.

Breathing - Excessive inhalation of vapors can cause nasal and respiratory irritation, central nervous system effects including dizziness, fatigue, nausea, and headache.

Swallowing - Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration (breathing of liquid into the lungs) must be avoided as liquid contact with the lungs can result in chemical pneumonitis and pulmonary edema/hemorrhage. Aspiration can result in severe lung damage or death.

First Aid/Emergency Procedures

Inhalation: Remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Keep person warm, quiet and get medical attention.

Skin Contact: Wash thoroughly with soap and water. Remove contaminated clothing. Launder contaminated clothing before re-use.

Eyes: Flush with copious amounts of water. Get medical attention.

Ingestion: Do not induce vomiting. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Get medical attention immediately. Product contains both petroleum naphtha and oxygenated solvents. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.

Primary Entry Route(s): Inhalation, eye contact, skin contact.

Chronic Health Effects: Chronic overexposure may aggravate existing skin, eye and lung conditions.

VI. REACTIVITY DATA

Stability: Stable. Hazardous Polymerization: Cannot occur.

Incompatibilities: Avoid contact with strong oxidizing materials, strong mineral acids and chlorine bleach.

Hazardous Decomposition Products: Carbon mono/di oxides.

Conditions to Avoid: None known.

VII. SPILL OR LEAK PROCEDURES

Procedures for Spill/Leak:

Small Spill - Absorb liquid on paper, vermiculite, floor absorbent, or other absorbent material and transfer to a recovery drum.

Large Spill - Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into recovery drums. Prevent run-off to sewers, streams or others bodies of water. Notify proper authorities, as required, that a spill has occurred.

Waste Management:

Landfill solids at permitted sites. Use registered transporters. Burn concentrated liquids at permitted sites. Avoid flameouts. Assure emissions comply with applicable regulations. Dilute aqueous waste may biodegrade. Avoid overloading/poisoning plant biomass. Assure effluent complies with applicable regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection:

If workplace exposure limit(s) of product is exceeded, a NIOSH/MSHA approved air supplied respirator is advised in the absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions. Engineering or administrative controls should be implemented to reduce exposure.

Ventilation: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain minimum exposure.
Eye Protection: Chemical Splash Proof Goggles and full face shield are advised for operations where eye or face contact can occur.
Gloves: Wear impervious gloves.
Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

IX. SPECIAL PRECAUTIONS

Special Handling/Storage:

To avoid skin contact and ingestion, wash hands and face well before eating or smoking. Do not permit food in work area. Avoid breathing mists if generated. Store at temperatures between 45°F and 110°F. Do not freeze. Reseal container when not in use. Do not store near acids, bases or flammables. Containers of this material should be rinsed when emptied, since emptied containers retain product residues (vapor, liquid, and/or solid). All hazard precautions given in this data sheet must be observed.

As of the date of preparation of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable federal and state law(s). However, no warranty or representation with respect to such information is intended or given.

Date revised: 11/21/2002
jpm

Attachment I

Emission Units Table

(includes all emission units and air pollution control devices that will be part of this permit application review, regardless of permitting status)

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
OP-09	S-28	C700E Goss International Offset Heatset Lithographic Presses	2017	Up to 72 inches	New/04-01-2017	F-01

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] New, modification, removal
[4] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table-& Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		Vent Time for Emission Unit *(chemical processes only)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions[4]		Maximum Potential Controlled Emissions[5]		Emission Form or Phase *(At exit conditions. Solid, Liquid or Gas/Vapor)*	Est. Method Used[6]	Emission Concentration[7] (ppmv or mg/m^3)
		ID No.	Source	ID No.	Device Type	Short Term[2]	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
S-28	Upward vertical stack	OP-09	One (1) C700E Goss International Offset Heatset Lithographic Presses	F-01	Centralized RTO – CS-250 Megtec RTO System	N/A	N/A	Per Press VOC Glycol Ether DB Glycol Ether EB Xylene Ethyl Benzene HAP's	 78.45 0.08 0.09 0.012 0.0034 0.18	 343.60 0.34 0.39 0.052 0.015 0.80	 4.16 0.04 0.067 0.011 0.0032 0.04	 11.66 0.12 0.19 0.031 0.0089 0.34	Gas/Vapor	MB – Based on Guidelines for Determining Emissions from Lithographic Printing	Approximately 1-10 ppm in the exit stack according to the Continuous Emission Monitoring System (CEMS)

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

[1] Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

[2] Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

[3] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, etc. **DO NOT LIST** CO_2, H_2, H_2O, N_2, O_2, and Noble Gases.

[4] Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[5] Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[6] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

[7] Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m^3) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO_2, use units of ppmv (See 45CSR10).

Attachment J

EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data

Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow [1] (acfm) *at operating conditions*	Velocity (fpm)	Ground Level *(Height above mean sea level)*	Stack Height [2] *(Release height of emissions above ground level)*	Northing	Easting
S-28	2.7*4.7 ft	1500 °F	Presses Running 18,067 acfm 12,596 scfm	1438 fpm	483 ft	35ft	4377.00 KM	246.90 KM

[1] Give at operating conditions. Include inerts.
[2] Release height of emissions above ground level.

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? ☐ Yes ☒ No ☐ If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? ☐ Yes ☒ No ☐ If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? ☐ Yes ☒ No ☐ If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? ☐ Yes ☒ No ☐ If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? ☒ Yes ☐ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads	N/A	N/A	N/A	N/A	N/A	N/A
Unpaved Haul Roads	N/A	N/A	N/A	N/A	N/A	N/A
Storage Pile Emissions	N/A	N/A	N/A	N/A	N/A	N/A
Loading/Unloading Operations	N/A	N/A	N/A	N/A	N/A	N/A
Wastewater Treatment Evaporation & Operations	N/A	N/A	N/A	N/A	N/A	N/A
Equipment Leaks	N/A	Does not apply	N/A	Does not apply	N/A	N/A
General Clean-up VOC Emissions – Manual blanket wash & Type Wash	Per Press VOC Glycol Ether DB – 112-34-5 Glycol Ether EB – 111-76-2 Xylene – 1330-20-7 Ethyl Benzene – 100-41-4 HAP's	 0.99 0.079 0.133 0.022 0.0063 0.079	 2.76 0.022 0.374 0.062 0.018 0.68	 0.49 0.04 0.067 0.011 0.0032 0.04	 1.38 0.11 0.187 0.031 0.0089 0.34	MB & EE
Other	N/A	N/A	N/A	N/A	N/A	N/A

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, and Noble Gases.

[2] Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[3] Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[4] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): OP-09

1. Name or type and model of proposed affected source:

(1) Goss International C700E offset heatset lithographic press utilizing the exsisting CS-250 Centralized Regenerative Thermal Oxidizer (RTO).

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

Per Press
150,000 linear feet of paper per hour with maximum speed of 2500 fpm.
Ink - 177,874 gallons
CR/T QFS - 414 Fountain Solution - 6,234 gallons
Anchor - Envirowash 7750 (Nova 410) - 3,650 gallons
Sebert - M-4 Blanket Wash - 596 gallons
Quad T-1003 Type Wash - 230 gallons
Natural Gas - 38.43 mmcf
Propane - 14,749 gallons

4. Name(s) and maximum amount of proposed material(s) produced per hour:

Page count will vary depending on web width and page width. In both cases the maximum amount produced would be 150,000 printed linear feet of paper. That would be based off of 2,500 fpm at a maximum web width of 72 inches.

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

Chemicals/Ink will be utilized to form impressions on paper as well as clean the printing operation. As the web runs through the dryer VOC's and HAP's will be captured and destroyed through the centralized RTO.

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

Natural gas - 38.43 mmcf per press
Propane - 14,749 gallons/year per press. Propane would be utilized as a backup in the event of natural gas shortages or curtailment.

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

Utilized AP-42 standard to determine emission criteria based on natural gas consumption.

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

4.42 mmbtu/hr per burner. Two burners per dyer for a total of 8.84 mmbtu/hr.

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

N/A

(g) Proposed maximum design heat input: × 10^6 BTU/hr.

7. Projected operating schedule:

Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ Per Press °F and psia

a.	NO_X	0.69	lb/hr	grains/ACF
b.	SO_2	0.0041	lb/hr	grains/ACF
c.	CO	0.577	lb/hr	grains/ACF
d.	PM_{10}	0.0522	lb/hr	grains/ACF
e.	Hydrocarbons		lb/hr	grains/ACF
f.	VOCs	4.2004	lb/hr	grains/ACF
g.	Pb	0.000010	lb/hr	grains/ACF
h.	Specify other(s)			
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
As in current Permit.	As in current permit
REPORTING	**TESTING**
As in Current Permit	As in current permit.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
As permitted.

Attachment M
Air Pollution Control Device Sheet
(AFTERBURNER SYSTEM)

Control Device ID No. (must match Emission Units Table): F-01

Equipment Information

1. Manufacturer: MEGTEC Model No. CS-250 RTO	2. ☒ Thermal Energy Recovery ☐ Recuperative (Conventional) ☐ Catalytic
3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
4. Combustion chamber dimensions: Length: See Drawing ft Diameter: ft Cross-sectional area: ft^2	5. Stack Dimensions: Height: 35 ft Diameter: 2.7 by 4.7 ft
6. Combustion (destruction) efficiency: Estimated: 99 % Minimum guaranteed: 97.5 %	7. Retention or residence time of materials in combustion chamber: Maximum: sec Minimum: sec
8. Throat diameter: ft	9. Combustion Chamber Volume: ft^3
10. Fuel used in burners: ☒ Natural Gas ☐ Fuel Oil, Number: ☒ Other, specify: Propane	11. Burners per afterburner: Number of burners: BTU/hr for burner: 4 mmbtu/hr for RTO BTU/hr
12. Fuel heating value of natural gas: Can supply if needed. BTU/lb	13. Flow rate of natural gas: Can supply if needed. ft^3/min
14. Is a catalyst material used?: ☐ Yes ☒ No If yes, catalyst material used:	15. Expected frequency of catalyst replacement: N/A yr(s)
	16. Date catalyst was last replaced: Month/Year: N/A
17. Space Velocity of the catalyst material used: N/A 1/hour	18. Catalyst area: N/A ft^2
	19. Volume of catalyst bed: N/A ft^3
20. Minimum loading: N/A Maximum loading: N/A	21. Temperature catalyst bed inlet: N/A °F Temperature catalyst bed outlet: N/A °F
22. Explain degradation or performance indicator criteria determining catalyst replacement: There will be no catalyst in the centralized RTO.	
23. Heat exchanger used? ☐ Yes ☐ No Describe heat exchanger:	24. Heat exchanger surface area? ft^2 25. Average thermal efficiency: %
26. Temperature of gases: After preheat: See Drawing °F Before preheat: °F	
27. Dilution air flow rate: ft^3/minute	
28. Describe method of gas mixing used:	

Waste Gas (Emission Stream) to be Burned

29.

Name	Quantity Grains of H_2S/100 ft^2	Quantity-Density (LB/hr, ft^3/hr, etc)	Source of Material
As permitted			

30. Estimate total combustibles to afterburner lb/hr or ACF/hr

31. Estimated total flow rate to afterburner or catalyst including materials to be burned, carrier gases, auxiliary fuel, etc.: lb/hr, ACF/hr, or scfm

Total flow rate = Flue gas flow rate

32. Afterburner operating parameters:

	During maximum operation of feeding unit(s)	During typical operation of feeding unit(s)	During minimum operation of feeding unit(s)
Combustion chamber temperature in °F	As permitted		
Emission stream gas temperature in			
Combined gas stream entering catalyst bed in			
Flue stream leaving the catalyst bed			
Emission stream flow rate (scfm)			
Efficiency (VOC Reduction)	%	%	%
Efficiency (Other; specify contaminant)	%	%	%

33. Inlet Emission stream parameters:

	Maximum	Typical
Pressure (mmHg):	As permitted	
Heat Content (BTU/scf):		
Oxygen Content (%):		
Moisture Content (%):		

Are halogenated organics present? ☐ Yes ☐ No
Are particulates present? ☐ Yes ☐ No
Are metals present? ☐ Yes ☐ No

34. For thermal afterburners, is the combustion chamber temperature continuously monitored and recorded?
☒ Yes ☐ No

35. For catalytic afterburners, is the temperature rise across the catalyst bed continuously monitored and recorded? ☐ Yes ☒ No

36. Is the VOC concentration of exhaust monitored and recorded? ☐ Yes ☒ No

37. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

38. Describe the collection material disposal system:

39. Have you included ***Afterburner Control Device*** in the Emissions Points Data Summary Sheet?

40. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:	RECORDKEEPING:
As permitted.	As permitted
REPORTING:	TESTING:
As permitted	As permitted

MONITORING:	Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING:	Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.

41. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.
100%

42. Manufacturer's Guaranteed Control Efficiency for each air pollutant.
97.5%

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.
As permitted.

Constants	
Oxidizer	
Minimum oxidizer efficiency percentage =	97.50%
Press Operating Hours	
Maximum annual operating hours =	5,600
Ink	
Percentage of solvent in ink =	45%
*Percentage of solvent retained in paper =	20%
*Percent captured (dryer/oxidizer) by the process =	100%
*Percent fugitive (ambient) to the process =	0%
**Maximum annual ink consumption (pounds) per press =	1,482,399
Fountain Solution	
*Percent captured (dryer/oxidizer) by the process =	70%
*Percent fugitive (ambient) to the process =	30%
**Maximum annual fountain solution consumption (gallons) per press =	6,234
Automatic Blanket Wash	
*Percent captured (dryer/oxidizer) by the process =	60%
*Percent fugitive (ambient) to the process =	40%
**Maximum annual automatic blanket wash consumption (gallons) per press =	3,650
Manual Blanket Wash Applied with Laundered Press Rags	
*Percent captured (retained in laundered press rags) by the process =	50%
*Percent fugitive (ambient) to the process =	50%
**Maximum annual manual blanket wash consumption (gallons) per press =	596
Miscellaneous Clean Up Solvent Applied with Laundered Press Rags	
*Percent captured (retained in laundered press rags) by the process =	40%
*Percent fugitive (ambient) to the process =	60%
**Maximum annual miscellaneous clean up solvent consumption (gallons) per press =	230

*Based on *Guidelines for Determining Emissions from Lithographic Printing Facilities* - Wisconsin Department of Natural Resources - August 21, 1997
**Annual usages based on actual usages multiplied by 125% to allow for potential emissions

Proposed Usages & Potential Emissions

Material	Maximum Usages Annual	Monthly	Hourly	Material Specifics Pounds/ Gallon	Percent VOC
****CR/T - Ink	1,482,399	123,533	264.71	8.33	45%
(gallons)	177,874	14,823	31.76		
****CR/T QFS - 414 Fountain Solution (gallons)	6,234	520	1.11	8.90	13%
****Anchor - Envirowash 7750 (Nova 410) (gallons)	3,650	304	0.65	7.05	31%
*****Siebert - M-4 Blanket Wash (gallons)	596	50	0.11	6.57	96%
*****Quad Type Wash EXP 1122 (gallons)	230	19	0.04	6.43	100%

***Based on Best Available Control Technology (BACT) for lithographic printing

****Captured VOC emissions formulas =

Pounds per year:	Maximum usage * VOC pounds per gallon * Percent capture * 1- Percent destruction efficiency
Tons per year:	Pounds per year/2,000
Pounds per month:	Maximum usage * VOC pounds per gallon * Percent capture * 1- Percent destruction efficiency/12
Tons per month:	Pounds per month/2,000
Pounds per hour:	Maximum usage * VOC pounds per gallon * Percent capture * 1- Percent destruction efficiency/5,600
Tons per hour:	Pounds per hour/2,000

*****Fugitive VOC emissions formulas =

Pounds per year:	Maximum usage * VOC pounds per gallon * Percent fugitive
Tons per year:	Pounds per year/2,000
Pounds per month:	Maximum usage * VOC pounds per gallon * Percent fugitive/12
Tons per month:	Pounds per month/2,000
Pounds per hour:	Maximum usage * VOC pounds per gallon * Percent fugitive/5,600
Tons per hour:	Pounds per hour/2,000

Confirm current materials being utilized in Atglen

f one (1) Goss C700 Heatset Offset Web Printing Presses
Iclutions

Emissions			
Fugitive		Total	
unds	Tons	Pounds	Tons
.00	0.00	0.00	0.00
.00	0.00	0.00	0.00
.00	0.00	0.00	0.00
1.39	0.11	234.31	0.12
.00	0.00	0.00	0.00
.00	0.0000	0.00	0.0000
4.89	0.187	374.89	0.187
.00	0.00000	0.00	0.00000
.07	0.031	62.07	0.031
.73	0.00887	17.73	0.00887
76	0.34	689	0.34

Emissions			
Fugitive		Total	
unds	Tons	Pounds	Tons
.00	0.00	0.00	0.00
.00	0.00	0.00	0.00
.00	0.00	0.00	0.00
.45	0.01	19.53	0.01
.00	0.000	0.00	0.000
.00	0.00000	0.00	0.00000
.24	0.0156	31.24	0.0156
000	0.000000	0.000	0.000000
.17	0.0026	5.17	0.0026
478	0.000739	1.478	0.000739
.34	0.03	57	0.03

Emissions			
Fugitive		Total	
unds	Tons	Pounds	Tons
.00	0.00	0.00	0.00
.00	0.00000	0.00	0.00000
.00	0.0000	0.00	0.0000
.04	0.0000	0.04	0.0000
.00	0.00000	0.00	0.00000
000	0.00000000	0.0000	0.00000000
067	0.000033	0.067	0.000033
0000	0.0000000000	0.00000	0.0000000000
011	0.0000055	0.011	0.0000055
03167	0.000001583	0.003167	0.000001583
.04	0.0000	0.04	0.0000

0.374891591
0.062066033

ounds/	Annual VOC Emissions Total		Monthly VOC Emissions Total		Hourly VOC Emissions Total	
ition	Pounds	Tons	Pounds	Tons	Pounds	Tons
.75	667,080	333.54	55,590	27.79	76.15	0.04
.08	6,734	3.37	561	0.28	0.77	0.000
.19	7,976	3.99	665	0.33	0.91	0.000
.58	3,923	1.96	327	0.16	0.45	0.0002
.43	1,478	0.74	123	0.06	0.17	0.00008
	687,190	343.60	57,266	28.63	78.45	0.04

Monthly HAP Emissions		Hourly HAP Emissions	
unds	Tons	Pounds	Tons
.00	0.00	0.00	0.00
.00	0.00	0.00	0.0000
.00	0.00	0.00	0.0000
6.11	0.03	0.08	0.0000
.00	0.00	0.00	0.00000
.00	0.00000	0.0000	0.00000000
5.39	0.033	0.090	0.000045
.00	0.000000	0.00000	0.000000000
.62	0.0043	0.0118	0.0000059
463	0.001231	0.003374	0.000001687
2.59	0.07	0.18	0.0001

Offset press oxidizer and dryer emissions
Natural Gas (NG) Constants

Parameter	Dryers
NG heat value (BTU/CF) =	1,020
Maximum input (mmBTU/hour) to dryers/oxidizers =	7.00
Maximum CF/hour (1,020 BTU/CF * mmBTU/hour) =	6,862.75
Maximum NG usage (mmCF/year) =	38.43
Maximum hours/year =	5,600
Maximum hours/day =	16.00
Preconditioning burner (1 per dryer) (mmBTU/hour) =	1.50
Main burners (2 per dryer) (mmBTU/hour) =	2.75
Total Maximum Design Heat Input (MDHI) (mmBTU/hour) =	7.00
Number of dryers per press =	1
Total (mmBTU/hour) per press =	7.00

NG/Propane Emission Factors (based on AP-42, External Combustion Sources, 7/98 - NG)			Propane AP-42
Specific Criteria Pollutant	Pounds/ CF NG	Pounds/ mmCF NG	Pounds per 1000 gallons
CO	0.000084	84	7.5
NOx	0.0001	100	13
PM (Total)	0.0000076	7.60	0.7
SO2	0.0000006	0.60	0.1
VOC	0.0000055	5.50	
Pb	5E-10	0.0005	

Maximum potential to emit calculations formulas	
Parameter	Formula
Pounds/year =	Maximum NG usage (mmCF) * specific criteria emission factor (pounds/mmCF)
Pounds/hour =	Maximum NG usage (mmCF/hour) * specific criteria emission factor (pounds/mmCF)
Tons/year =	Maximum NG usage (mmCF) * specific criteria emission factor (pounds/mmCF)/2,000

	Dryers		
Parameter	Pounds/year	Pounds/hour	Tons/year
CO	3,228	0.58	1.61
NOx	3,843	0.69	1.92
PM (Total)	292	0.05	0.15
SO_2	23	4.12E-03	0.01
VOC	211	0.04	0.11
Pb	0.02	3.43E-06	9.61E-06

Total Potential to Emit Criteria Emissions from one (1) Goss C700 Printing Presses and Associated Dryers

	Annual Criteria Emissions		Monthly Criteria Emissions		Hourly Criteria Emissions
Parameter	Total Pounds	Tons	Total Pounds	Tons	Total Pounds
CO	3,228	1.61	269.02	0.13	0.5765
NOx	3,843	1.92	320.26	0.16	0.6863
PM (Total)	292	0.15	24.34	0.01	0.0522
SO_2	23	0.01	1.92	0.00	0.0041
VOC	23,522	11.76	1960.21	0.97	4.2004
HAP	689	0.34	57.42	0.03	0.0418
Pb	0.02	9.61E-06	0.00	0.00	0.000010

Back up Propane Emissons from one (1) Goss C700 Printing Presses and Associated Dryers
Est Annual Consumption (gal) = 14,749

	Annual Criteria Emissions		Monthly Criteria Emissions		Hourly Criteria Emissions
Parameter	Total Pounds	Tons	Total Pounds	Tons	Total Pounds
CO	111	0.06	9.22	0.00461	0.01975
NOx	192	0.10	15.98	0.00799	0.03424
PM (Total)	10	0.01	0.86	0.00043	0.00184
SO_2	1	0.00	0.12	0.00006	0.00026
VOC	0	0.00	0.00	0.00000	0.00000
Pb	0	0.00E+00	0.00	0.00000	0.00000

Attachment N: Emission Analysis of Current Permit vs. Projected Changes with C700 Install				
Pollutant	**Current M3000 Permitted Emissons TPY**	**Proposed C700 Emissions TPY**	**Annual Tons Reduced**	**Annual Tons Increased**
CO	3.57	1.61	1.96	N/A
NOx	4.70	1.92	2.78	N/A
PM	0.33	0.15	0.18	N/A
SO2	0.07	0.01	0.06	N/A
VOC	15.96	11.77	4.19	N/A
Xylene	0.07	0.03	0.04	N/A
Ethylbenzene	0.01	0.01	0.00	N/A
Glycol Ether DB	0.00	0.12	N/A	0.12
Glycol Ether EB	0.00	0.19	N/A	0.19

Pollutant	**Current M3000 Permitted Emissons lbs/hr**	**Proposed C700 Emissions lbs/hr**	**Annual lbs/hr Reduced**	**Annual lbs/hr Increased**
CO	1.32	0.58	0.74	N/A
NOx	3.36	0.69	2.67	N/A
PM	0.12	0.05	0.07	N/A
SO2	0.25	0.04	0.21	N/A
VOC	4.68	4.20	0.48	N/A
Xylene	0.02	0.011	0.01	N/A
Ethylbenzene	0.00	0.0032	0.00	N/A
Glycol Ether DB	0.00	0.04	N/A	0.04
Glycol Ether EB	0.00	0.07	N/A	0.07

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that Quad/Graphics, Inc. has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Class II Administrative Update for one (1) C700 Heatset Lithographic Printing Press located on 855 Caperton Boulevard in Martinsburg, in Berkeley County, West Virginia. The latitude and longitude coordinates are: 39.3038° N & 77.5722 W.

The applicant estimates per press the decreased potential to discharge the following Regulated Air Pollutants will be: 1.96 TPY CO, 2.78 TPY NOx, 0.18 TPY PM, 0.06 TPY SO2, 4.19 TPY VOC, 0.04 TPY Xylene, and 0.00 TPY Ethyl Benzene. The applicant estimates per press the increased potential to discharge the following Regulated Air Pollutants will be: 0.12 TPY Glycol Ether DB, and 0.19 TPY Glycol Ether EB.

Startup of operation is planned to begin on or about the 1st day of June, 2017. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.
Dated this the (9th) day of (January), (2017).

By: Quad/Graphics, Inc.
Todd Marino
Plant Director
855 Caperton Boulevard
Martinsburg, WV 25403

Attachment S
Title V Permit Revision Information

1. New Applicable Requirements Summary	
Mark all applicable requirements associated with the changes involved with this permit revision.	
☐ SIP	☐ FIP
☒ Minor source NSR (45CSR13)	☐ PSD (45CSR14)
☒ NESHAP (45CSR15)	☐ Nonattainment NSR (45CSR19)
☐ Section 111 NSPS (Subpart _____)	☐ Section 112(d) MACT standards (Subpart KK)
☐ Section 112(g) Case-by-case MACT	☐ 112(r) RMP
☐ Section 112(i) Early reduction of HAP	☐ Consumer/commercial prod. reqts., section 183(e)
☐ Section 129 Standards/Reqts.	☐ Stratospheric ozone (Title VI)
☐ Tank vessel reqt., section 183(f)	☐ Emissions cap 45CSR§30-2.6.1
☐ NAAQS, increments or visibility (temp. sources)	☐ 45CSR27 State enforceable only rule
☐ 45CSR4 State enforceable only rule	☐ Acid Rain (Title IV, 45CSR33)
☐ Emissions Trading and Banking (45CSR28)	☒ ☐ Compliance Assurance Monitoring (40CFR64) (1)
☐ NO_x Budget Trading Program Non-EGUs (45CSR1)	☐ NO_x Budget Trading Program EGUs (45CSR26)
(1) If this box is checked, please include **Compliance Assurance Monitoring (CAM) Form(s)*** for each Pollutants Specific Emission Unit (PSEU). Would be the same as already drafted in the permit.	

2. Non Applicability Determinations
List all requirements, which the source has determined to be not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and the rationale for the determination. Please see attachment for proper documentation.
Permit Shield ☐ Permit Shield is Requested *(not applicable to Minor Modifications)*

3. Change in Potential Emissions		
Pollutant	Change in Potential Emissions (+ or -), lb/hr	Change in Potential Emissions (+ or -), TPY
CO	**(-) 0.74 lb/hr**	**(-) 1.96 TPY**
NOx	**(-) 2.67 lb/hr**	**(-) 2.78 TPY**
SO2	**(-) 0.07 lb/hr**	**(-) 0.18 TPY**
VOC	**(-) 0.48 lb/hr**	**(-) 4.19 TPY**
Xylene	**(-) 0.01 lb/hr**	**(-) 0.04 TPY**
Ethyl Benzene	**(-) 0.00 lb/hr**	**(-) 0.00 TPY**
Glycol Ether DB	**(+) 0.04 lb/hr**	**(+) 0.12 TPY**
Glycol Ether EB	**(+) 0.07 lb/hr**	**(+) 0.19 TPY**

4. List other Active NSR Permits / Permit Determinations / Consent Orders associated with this permit revision (if any):		
NSR Permit and/or Consent Order Number	Date of Issuance	NSR Permit / Consent Order Condition Number
R30-003-00042-2012	04/10/2012	R30-003-00042-2012
	MM/DD/YYYY	
	MM/DD/YYYY	

5. Inactive Permits / Obsolete Permit or Obsolete Consent Order(s) Conditions Associated With This Permit Revision		
NSR Permit and/or Consent Order Number	Date of Issuance	NSR Permit / Consent Order Condition Number
	MM/DD/YYYY	
	MM/DD/YYYY	
	MM/DD/YYYY	

6. Suggested Title V Draft Permit Language

Are here any changes involved with this Title V Permit revision outside of the scope of the NSR Permit revision? ☒ Yes ☐ No

If Yes, describe the changes below. Also, please provide suggested Title V Draft Permit language for these changes (including all applicable requirements and any monitoring /recordkeeping/ reporting requirements associated with the changes), or attach a marked up pages of current Title V Permit. Please include appropriate citations for those requirements being added / revised.

See attached documentation.

7. Certification For Use Of Minor Modification Procedures *(for Minor Modifications only)*

Note:	*This certification must be signed by a responsible official. Minor Modification applications without a signed certification will be returned as incomplete. The criteria for allowing the use of Minor Modification Procedures are as follows:*

i. Proposed changes do not violate any applicable requirement;

ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;

iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;

iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;

v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;

vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

Notwithstanding subparagraph 6.5.a.1.A. of 45CSR30 (items i through vi above), minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in rules of the Director which are approved by the U.S. EPA as a part of the State Implementation Plan under the Clean Air Act, or which may be otherwise provided for in the Title V operating permit issued under this rule.

Pursuant to Section 6.5.a.2.C of 45CSR30, the proposed modification contained herein meets the criteria for use of Minor permit modification procedures as set forth in Section 6.5.a.1. The use of Minor permit modification procedures are hereby requested for processing of this application.

(Signed): _____ Date: 01 / 06 / 2017
(Please use blue ink) *(Please use blue ink)*

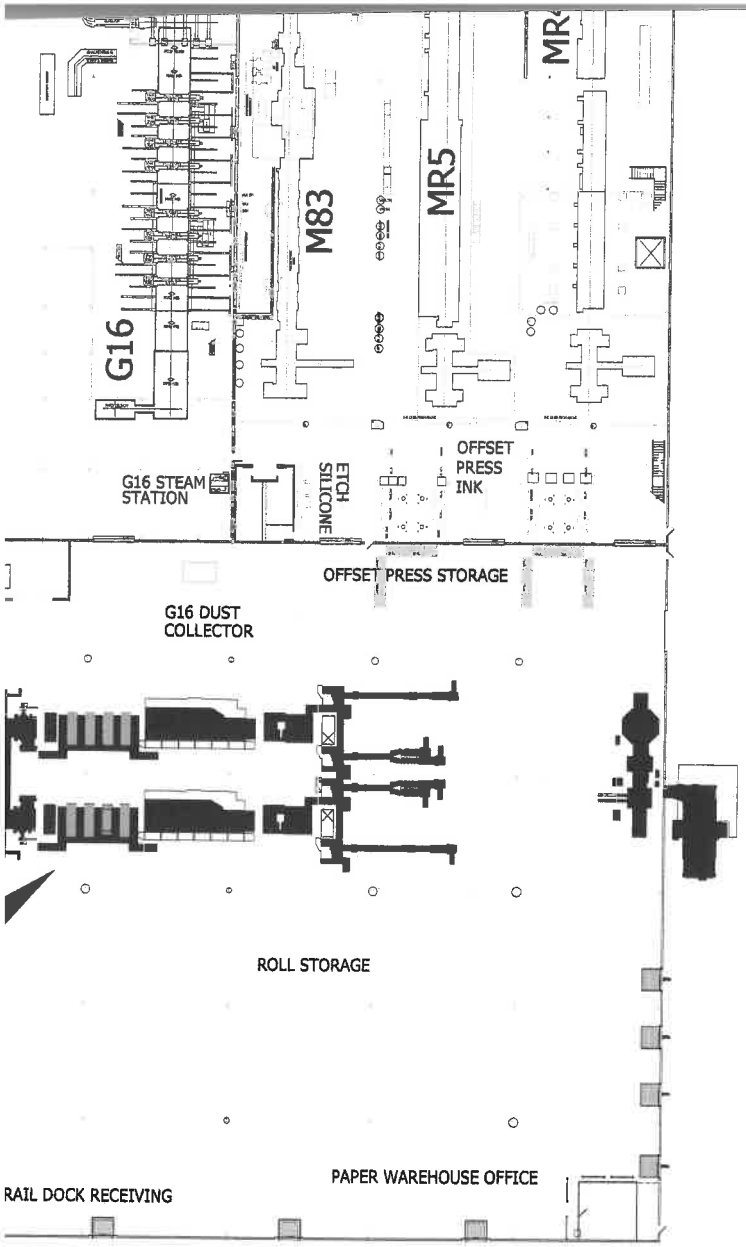
Named (typed): Tom Estock On behalf of Quad Graphics, Inc. Title: Director of Environmental

NOTE: ***(1) For Administrative Amendments, the ability to operate with the changes described in this permit application is granted upon submittal of the application.***

(2) For Minor Modifications, the ability to operate with the changes described in this permit application is granted after seven (7) days from the submittal of the application, or upon issuance of the NSR permit, whichever is later.

(3) For Significant Modifications, the ability to operate is granted upon issuance of the modified Title V permit.

** All of the required forms and additional information can be found and downloaded from DAQ's Permitting Section site* **www.wvdep.org/daq**, *requested by phone (304) 926-0475, and/or obtained through the mail.*



sburg Facility

LAYOUT
FLOOR PLAN

	CURRENT AS OF: 2/10/16	CHKD BY: al	
		SCALE: none	
:P00G_permit.dwg		SHEET 1 OF 1	REV: 0

M:\Martinsburg 1 - WV\Martinsburg\01 Project Proposals\Bldg 1 Press 21 Press 22\QG Facilities\WVQ-EP00G_permit.dwg 2/10/16 hoffi